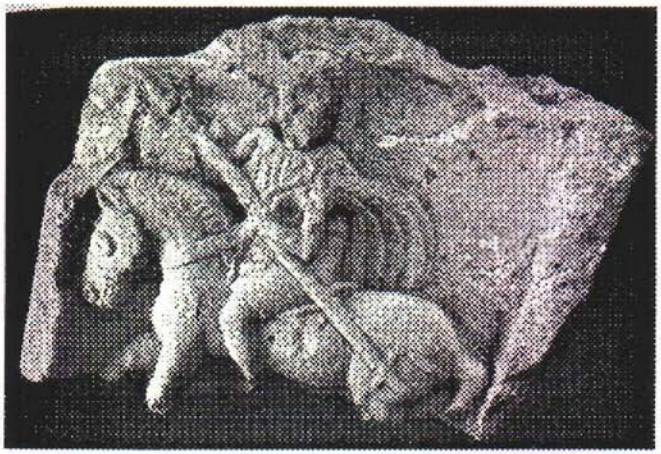
THE MANKIND QUARTERLY



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Herbert F. Mataré

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Cover Picture: Image of a mounted Celtic warrior unearthed by ploughing at Whitcombe Farm, Dorset, England (Photo: Royal Commission on Historical Monuments). (See article: *The Origin of the Legend of King Arthur*).

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The Origin of the Legend of King Arthur

Philip Thornhill[1]
Clapton, London

"We do not know where this was", says Professor Sims-Williams (1983: 8) of the site of the battle of 'Badonicus Mons', "and it may be doubted whether we ever shall, any more than we shall establish whether a man called Arthur fought there". Other recent, heavyweight, academic assessments of the problem of the existence of the legendary King Arthur, as a historically important figure, have come up with nothing more solid than "he may well have" (Charles-Edwards 1991: 29, cf. Jackson 1959), or, "he may very well not have", existed (Padel 1994:1). It is certainly true that if the legend of king Arthur derives from some particular historical individual, some fifth or sixth century warlord, then it looks as if we just do not have enough information about the period to prove that fact, let alone know anything about him. After all historical information of this kind is strictly finite, and there must have been all manner of fascinating people and events during this period which we do not, and never will, know about. But if the legend has some other kind of origin, the position need not be so hopeless. If, for instance, our figure has his roots in ancient cult-beliefs or mythology, then that is something that is likely to be accessible to us via some other route: that belongs not to the world of isolated, empirical and potentially undiscoverable, historical facts but rather to the universe of infinitely complex but infinitely inter-linked cult belief and tradition.

Arthur's links with 'Celtic mythology' are well known, and one scarcely needs to go over them again: he is associated with a 'journey to the Otherworld' (Haycock 1983/4, Bromwich 1978: 140, Jones G&T: 105, 108) that has close analogues in Celtic tradition (Sims-Williams1991: 54-7, Jones G&T 21-34, *Historia Britonum* 13) and more distant ones in, for instance, Greek and Middle Eastern tradition

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(e.g. Frazer: 324-7, Eliade: 63-7, 157, 290-3), with its ultimate roots in the characteristic cult beliefs of the early agriculturalists of the Neolithic, associated with the cyclical re-birth of vegetation. The Otherworld sometimes takes the form (characteristic for the Celts) of an island,[2] and is sometimes where Arthur is waiting to 'return',[3] a legend that (for Arthur and other figures) almost certainly owes something, ultimately, to the 're-birth' of a vegetation-associated deity as well as to political wishful thinking. Arthur, in this context then, fills a role one would most readily assign to a deity but, of course, the problem is that the 'mortal' and the 'divine' are so readily confused: deities are euheumerised into mortals while renowned mortals acquire the characteristics of deities. Indeed the 'Culture-Hero' might fit into this latter category and this is one of the labels that Arthur has attracted (e.g. Chambers: 205-32). In any case Arthur's appearance in any kind of 'divine' role can be seen as merely something consistent with the immense popularity of his legend and the fact that all kinds of folk-tales of mythological origin were attracted to him. It has not been possible to actually explain the origin of the figure, Arthur, himself, in terms of mythology,[4] in which he has no obvious antecedent. But if the mythological origin WAS obvious it would, of course, have been discovered by now. It may still be that we simply have not yet dug deep enough.

The historical origin for Arthur has generally been the favoured one for good reason. Firstly the name understood as from Latin 'Artorius' is, in the words of Rachel Bromwich (1978: 284, following

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[2] *Vita Merlini*; Caradoc's *Vita Gildae* 10-11 (ed. & trans. Hugh Williams, 1899). For 'island-otherworlds' in an Irish context see e.g., *The Voyage of Bran, son of Febal*, ed. Meyer, Kuno and Knut, Alfred, 1895; in an ancient context, Pomponius Mela, *De Situ Orbis* III.

[3] Loomis 1959a; Herman's *De Miraculis Sanctae Mariae Laudensis* (c.16) in Migne, *Patrologia Latina* 156, cols. 961-1018 at 983, see Tatlock 1933a; *Prophetia Anglicana Merlini Ambrosii Britanni* (ed. 1603, lib.1,p. 17).

[4] Padel (:31), while arguing in favour of such an origin, can only come up with the historical (but from the wrong era) 'Lucius Artorius Castus' (following Kemp Malone 1925/5), to explain the actual name .

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Zimmer 818, note 1), thus to be classed with the group of names of Latin derivation borne by leading Britons in the sub-Roman period (exx. Patricius, Ambrosius Aurelianus, etc.)'. Second, he is consistently[5] placed in a definite historical context, associated with the above mentioned battle of 'Badonicus Mons' and the period of revived British fortunes in the struggle against the Saxons, as described by our unique early source, Gildas (*De Excidio* 25 in Winterbottom), and datable to the later fifth, or earlier sixth, century. This historical context is established in our earliest, firmly datable, source, The *Historia Britonum* of circa.830 (Morris 1980; Lot 1934; Dumville 1985) , is backed up by the *Annales Cambriae* (Morris 1980; Williams 1860; of c. 950, but perhaps linked with the *Historia*), and, arguably, found such resonance in Brittany as to suggest comparable, independent, traditions, there (De La Borderie; Le Duc; Fleuriot 1985: 277, 245-6)

Yet there is a problem with the 'historical' origin: Arthur's subsequent reputation is so impressive (considerable, in Celtic circles, even by the time of the compilation of the *Historia Britonum*) that if it is to be justified purely by the outstanding achievements of his historical career (as Charlemagne, Alexander the Great, Julius Caesar....) then we should expect him to figure, somehow, even in the very meagre sources - of a more contemporary or reliable kind than the *Historia* - that we have for the period. In this respect his absence from the *De Excidio* of Gildas is, of course, especially problematic, while, despite his dependence on Gildas, we cannot entirely overlook the absence of such an apparently outstanding character, in Bede, either. Whether we regard Arthur as 'historical' or not we need to come up with some kind of explanation for the extraordinary success of his legend, most probably in a context other than that of his actual historical achievments.[6]

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[5] This consistency of historical context is not true of the Irish 'Finn' (almost certainly a non-historical figure), with whom Van Hamel (1934), Padel (22-3) and others, compare Arthur: while, by comparisom with Arthur < Artorius, "from such a very plain and natural name as Finn....nothing can be inferred' (Van Hamel 235).

[6] Sir John Rhys (1891:8) fully grasped this problem (when many, since, have failed to). His solution is another matter.

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Though, we do need to explain, as well, the name and the consistent historical context.

I have, in fact, attempted to dig deep into the depths of the more obscure cult traditions that have left their trace in the toponymy and survive in disguised Christianised form in the hagiography. I have come up with a tradition of cult-figures in *Ar-* that originates with the pre-Indo-European substrate, but which surfaces significantly in our sources for sub-Roman Britain, in the form of the martyr 'Aaron', mentioned by Gildas, as one of a pair with a 'Iulius', and whose name I take to be a Christian 'substitution' for a similar-sounding pagan one. The argument for that (a quite long and involved one) must be found in an earlier paper (Thornhill 1999). It might be seen as suggesting, though, some kind of feasible antecedent, in the world of cult-belief, for the apparently 'sub-Roman' figure of 'Ar-thur'. Since Aaron was one of only three martyrs mentioned by name by Gildas (he implies there were many more: *De Excidio* 10) it figures that his cult must have been a rather outstanding one in Gildas's time. This might bring us some way down the road towards an explanation for the outstanding renown of Arthur, himself, if we are to see him as deriving his origin from related cult traditions. Of course the name 'Aaron', (from *Ar-* + *-on(a)*) or the theo/toponym *Ar-*, is not 'Arthur', and a convincing explanation for the evolution of the latter from the former needs to be found if we are to progress beyond the bounds of the merely vaguely possible.

Nevertheless in our cult-related toponym *Ar-*, we can immediately begin to see an explanation for some of the characteristic features of the Arthurian legend. That is, of course, precisely its association with the toponymy throughout Celtic Britain and its borderlands, and also beyond, as far as Sicily. It is easy to imagine how any instances of a widespread toponym *Ar-* (or related toponyms[7]) - might have become associated with a figure of snowballing fame, 'Ar-thur', if that figure derived his own origins from the same cult-associated toponymic root.

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[7] See Thornhill 1999, where I derived *ar-*, via *har-*, *khar-*, from *kar*, with voiced variant *gar*, and parallel labialised derivative *ǥar-* . For *kar*, see below.

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One thinks in particular of Arthur's association with hills and mountains[8] - and the characteristic legend about him and his warriors lying asleep within.[9] I have argued that our *Ar-* oronym (as in the Welsh Aran mountains, Scottish Isle of Arran, continental pic d'Ar , etc..) will have been understood as also denoting the 'god' of the hill, mountain, or island so that in many cases there may have been a deity, or derivative 'figure of folklore' who will have been readily identifiable with the famous Arthur, to whom he (or she) will have been in some way related.

Of course this kind of thing is typical of many legendary figures (if not so often the ascertainably historical ones) but some of those other figures may have had parallel toponymic associations, while in the case of Arthur we need to explain his evident pre-eminence in the field. In this context, in Britain, he is rivaled (and overtaken) perhaps only by the devil: that is a figure who loomed large in the primitive - or peasant - consciousness. This might suggest that a context of cult-superstition and myth would be appropriate to any figure with comparable appeal. Of course much is to be attributed to the unrivalled popularity, in mediaeval times and beyond, of the Arthurian story - and this is the more true the more recent and artificial are his traces in toponymic legend. However it is that popularity that itself needs explaining (was it pure chance that Arthur attracted the most brilliant story-tellers ?) while

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[8] Thus Ben Arthur (Argyll), Bann Arthur (Brecon), Pen Arthur (Carmarthen) Moel Arthur (Denbighshire), Great and Little Arthur (islands in the Scillies); and typically encouraging an anthropomorphic interpretation of the topography: "Arthur's Chair" (= Bann Arthur; in Geraldus); "Arthur's Seat" (Edinburgh, Dumbarton, Angus, Aberdeen, Banff, Dumfriesshire, Liddesdale in Cumberland). Watson 1926: 208-9; Snell: 38,138, 161, 203,220; Ashe: 1980.

[9] Localised at Marchlyn Mawr, Snowdon (both Snowdonia); Craig y Dinas (Glamorgan), Caerleon, Ogo'r Dinas (Carmarthen), Alderley Edge (Cheshire), Sewingshields (Northumberland), Eildon Hills (Melrose), Richmond Castle, South Cadbury; Rhys 1901: 236-7, 458-97; Snell 1926: 50-4, 208-9, 214-7. This type of legend can be traced back to Plutarch, *De Defectu Oraculorum* 18.

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Padel has demonstrated the "vitality and consistency", over a very long period of time, of the localised legends about Arthur that link him to the toponymy.[10] Arthur's association with the toponymy goes back to our earliest sources[11] and is associated with the furthest dissemination of the legend. The fact that as early as the twelfth century Arthur was associated, in an 'Otherworld' context, with the Sicilian mount Etna,[12] suggests that the links that the legend had with both the toponymy and (related) mythology were at least a part of what lay behind its broad appeal and ability to disseminate far and wide.

In fact it might be possible to actually detect some suggestions of a link between Arthur and the specific etymological background that I have hypothesised for the *Ar-* toponym. My theory proposed a derivation of *ar* from *kar*, with a basic meaning , 'rock', 'stone', and on this basis particularly common as an oronym. Interestingly, the Sawley glosses (made in the 12th century to the *Historia Britonum*) associate one "Carutius imperator" with a ruin in Stirlingshire, which the *Liber Floridus* associates with Arthur (Dumville 1977a: 22-4). Carutius clearly has to do with the local river Caron, one of many toponyms which might contain our root *kar-*, even if (as I suggested, 481-2 with note 18) that has become assimilated to an Indo-European homonym (Nicolaisen 1976: 188). It is quite possible that the gloss and the *Liber*

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[10] Padel: 19, 25-30. While in some localised contexts Arthur looks like a recent arrival, in others he has been displaced : Rhys 1901: 493

[11] *Historia Britonum* 73 (see below, note). *Liber Floridus* in J-P Migne, Patrologia Latina, t, 163, 1003-32 at 1012; Herman, *De Miraculis*, 16-17. See Padel: 2-6.

[12] Gervase of Tilbury, *Otia Imperiala* of c. 1211 (ed. F. Liebricht, Hanover 1856) : cf. *Floriant et Florete*, (ed. H.F. Williams London 1947) 566-9, 8200-250; Caesarius of Heisterbach, *Dialogus Miraculorum*, (ed. J. Strange, 1851, xii. 12); the Otranto mosaic of 1165 (Loomis 1959b: 61), depicts 'Arturus Rex' mounted on a goat, which is how Walter Map (c. 1190) describes the king of a subterranean realm. Other early references to 'Arthur underground' are in Etienne de Rouen's *Draco Normannicus* (of c.1169), the 13th century *Wartburgkrieg*, and *A Dispute between a Christian and a Jew*, of c. 1375.

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Floridus represent variant versions of an oral tradition (not impossibly concurrent) that have their point of contact in the close relationship between (theo-)toponyms in *kar-* and *ar-*. The description of 'Carutius' as 'imperator' might suggest that something of the inflated reputation of Arthur has rubbed off on this local figure.

One might compare the association of Arthur with St Carannog or 'Carantocus', (in the Life of that saint: Wade-Evans 1944; Doble: IV, 31-52), at Carhampton in Somerset. The latter name ("Carrum", "Carrou" in the Life) almost certainly includes a word *carr-*, 'a rock', as appropriate to a rocky valley, there (Doble: 39-41). Ekwall (1960: 80) notes that Old English *carr*, 'a rock', was a "Celtic loanword" and that "the distribution of the element in place-names suggests a British.... source". Furthermore, "one must assume that the Old British language had a shorter form" (than Old Welsh *carrec*, 'a rock') "which is the base of Old English *carr*". We would take that shorter form to represent a borrowing from the substrate (following, e.g., Hubschmid 1959: see Thornhill 479, note 13), as well as having been the base of the British name that was Anglicised into 'Carhampton'. Padraig O'Riain (1994: 388) though the saint's name ('Carantoc') might "lurk behind" the place-name: there surely must be some relationship between the two but most likely one by which our ancient theo-toponym in *kar(r)-* has been reinterpreted in terms of Celtic *car-*, 'to love' (Vendryes: C36-8), to give the name 'Carantoc', 'lovable one', to a cult-figure local to this place (as well as Cardigan and elsewhere, on most likely the same basis). Once again the close etymological relationship between the theo-toponyms, *ar-* and *kar-*, would be what ultimately lies behind the association of Arthur with both this saint and this place. In fact, together with this etymological relationship there might actually have been a semantic one between *kar* and *art-*.

It is, in fact, in this toponymic context where we can find a convincing explanation for, at least the first step in the genesis of the particular form 'Arthur' from *ar-*. A similar meaning to *kar*, 'a rock', is found, in

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Cormac's Glosary,[13] for Irish *art*, 'pierre ou pierre plat du tombe', which Vendryes (1959: A-91) related to the Cisalpine Gaulish 'artuass', "pierres (?)" of the Todi inscription[14] (of circa 150 B.C.) and the proper name 'Artemia', which in the Life of St Domitianus (2.15 in ASS: July I, p. 47) is appropriate to a rock - "usque ad petram quae Artemia dicitur" - as well as, perhaps, to its presiding 'genius'. The same root is very likely found in the Vulgar Latin 'artuuus', 'couteau', the words for knife, being typically associated with words for 'stone' (e.g. Latin 'saxum', 'a rock'; Old English 'seax', 'a knife'). Vendryes suggests this word "pourrait être un ancien nom emprunté par les celtes à une population antérieure". We could very credibly associate this with our substrate-derived toponym *ar-* from *kar-*, on the assumption that the 't' represents some kind of suffix.[15] Meanwhile, it was proposed long ago,

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[13] See Russel 1988: 29. Interestingly *art* is also said to mean 'god' (cf. 'Artemia' and our hypothesis about a cult figure/deity 'Art-'). This might relate to the third meaning given: 'high', though if here *art* is a variant of *ard*, ('high', cf. Latin *arduus* etc..) that variant might have come about through confusion of *ard* with an *art* = 'god', associated with *art* = 'a rock' (perceived as a divinity ?).

[14] "Karnitu artuass" = 'congressit lapides (sepulcrales)': Lejeune 1971: 384-94; Russel 1995: 5-6.

[15] The Aquitanian deities 'Artahe/Artehe/Arte' (Holder 223) and 'Arixo/us' have to do with Basque (< Aquitanian) *arte*, 'holm-oak' and *aritz*, 'oak' respectively (Trask: 399). Both of these words might derive from a root *arto-* (perhaps also in Spanish *arto*, 'hawthorn') that also appears in words for uncultivated, waste, or broken, stony, ground. It is possible to see the words for waste ground deriving from the trees that are typically found on it, but on the other hand the tree names have been derived (Alessio 1935) from *(h)arri*, 'a rock', on the basis of a progression 'stone' > 'stony ground' > 'tree that grows on stony ground', that is paralleled in substrate-derived Romance by the relationship between *karr-*, 'a rock', Occitanian *garriga*, 'moorland' and Provencal *garik,* Spanish *carrasca*, for a type of oak (Agud 1989: 11-12, 159-160). We might prefer (cf. Thornhill p. 484, note 22) to derive all these from a primitive *(k)ar-*, 'rock', and our *art*, 'rock' might belong here somewhere if it is not a parallel derivative from *(k)ar-* that belongs to an entirely different branch of the substrate, to the above. The name 'Artemia' might,

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by Zeuss (1871; followed by Holder: I, 228), that *art*, 'a stone', is the root that features in 'Arturus', 'Arthur'.[16]

In fact, understood as at least a stepping stone towards the name 'Arthur' it has the potential to explain, even more specific, characteristic features of the legend, as associated with the toponymy, than does simply its association with the theo/toponym *Ar-*. In the great majority of toponymic legends Arthur is associated with stones: prehistoric megaliths, quoits, cromlechs and so on but also natural rocks and boulders of a conspicuous nature, or even craggy outcrops (Padel: 19, 26-7; Snell; Ashe 1980). The earliest recorded local legends about Arthur - in the *Mirabilia* of the *Historia Britonum* (c.73) - concern a pile of stones ("Carn Cafal") as well as a "tomb" ("of Amr") that is probably a mound or prehistoric barrow (Padel: 3-4) but just might have been another pile of stones or tomb-like rock. Rocks and megaliths clearly had a spiritual dimension in the Neolithic and no doubt continued to do so long after: there may always have been an associated guardian spirit, deity or derivative figure of folklore. There will always have been, on our theory, a close relationship between the word for 'rock' or 'mountain' and the names of rock- or mountain-associated deities.[17] In particular it is easy to imagine how an ancient, substrate, word for 'stone' might have evolved into a proper noun (compare Celtic *abona* < English 'Avon') that designated certain rocks, the deity associated with them and ultimately a deity associated with conspicuous rocks in

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conceivably, show the influence of Greek 'Artemis', but that (Non-Indo-European) name itself (appropriate to a god of 'wild places' ?) might well incorporate our (widespread and ancient: Thornhill: 485, note 24) root *(k)ar-*, if not specifically our derivative, *art-*, 'rock'.

[16] Tatlock (1950: 220-2) adduces an Artusius Calvus of 1095, and assorted place-names in Artu-, to suggest that the name "Artus was more familiar in France than can be proved at present" thus explaining why this 'variant' form was used by the French for 'Arthur'. If this French 'Artus' had to do with the *artu-* in *artu-ass* and *artu-uus* then on the basis of our hypothesis we can see why it will so readily have been identified with 'Arthur', while we might have another clue as to why the latter's legend found such resonance in France.

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general: the 'Artemia', quoted above would seem to be an example of at least the first, and probably the second, part, of just such a process.[18] We have then, here, a further explanation for the popularity and widespread appeal of the Arthur legend, as well as a specific one for its characteristic association with conspicuous stones. Once again it is true to say that many other legendary figures are associated with conspicuous features of the landscape, including rocks, but none so commonly as Arthur (specifically with stones and megaliths not even, perhaps, the devil) so in his case, above all, we might feel the need for some especially strong and specific link.

The fact that we are dealing with a substrate derived name is significant too: it is compatible with the relative invisibility - in the kind of evidence that is available to us - of the cult-traditions that lie behind our figure 'Arthur', since it can plausibly be associated with the more 'submerged' traditions of a rural underclass rather than of those who merged with the Roman elite, commissioned inscriptions, and so on. Of course in a period of upheaval such submerged traditions might well be thrown up onto the surface. It is important that our theory about Aaron suggests that they indeed were, in the sub-Roman period. If that theory is accepted then, combined with the eminent suitability of a cult-name in *Art-*, 'stone', as a basis for many of the observable features of the Arthurian legend, it gives us, I would say, already, quite a powerful argument about the possible, or even likely, origins of that legend.

Strictly speaking, though, we only have an argument for a link between the folk traditions associated with conspicuous rocks and a name in *art-*. For our next hypothesised step - a semantic rather than phonetic one - towards a final 'Arthur' it is important to bear in mind that my argument about toponyms and cult names emphasised the

[17] E.g. the Pics du Gar, as associated with the divine name 'Garra', both from *kar(r)-*, 'a rock' : Holder I, 1984; Dauzat 83,90, 141; Flutre 147-9.

[18] The festival date for St Domitianus is the same as that of (our saint and the Biblical: Thornhill: 470-1) Aaron, the 1st of July: perhaps just a coincidence but not if the cult of that saint (of dubious historicity: *ASS*, July I, pp. 42-44) has its roots in local cult traditions with which the rock 'Ar-temia' was also linked.

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continuity of tradition that there could often be between similar sounding, even if philologically distinct, names: the assimilation of an old name to a similar sounding and now more relevant, new one, especially in a context of linguistic succession. We would propose the reinterpretation of substrate *art-* in terms of Celtic *art-* (< *arth*, in neo-Brittonic), 'bear'. Celtic *art-*, 'bear', can be seen, of course, to have had cult associations (the Dea Artio of Bern, Mercury Artaios etc...Ross: 434-5; Green 184-5) so we can envisage a merger or assimilative process within a cult context. Although the favoured derivation of Arthur is from Latin 'Artorius', as alluded to above, yet a possible derivation from Brittonic *arth* has been noted (Bromwich 1991: 7-6), while it is certain the name was sometimes interpreted in terms of that word. The actual form 'Artorius' (rather than the usual "Artur(i)us") is nowhere recorded while, as Rachel Bromwich has noted (1978: 544-5) "six authors of the twelfth and thirteenth centuries, apparently each one writing independently, employ the form 'Arcturus'" (the Latin name for a star based on Greek Αρκτ-ουρος, 'guardian of the bear'), which looks like a name chosen partly because of its similarity in sound to 'Arturus' and party because it translates Welsh 'Arth-'. This included Ailred of Rievaulx (*Speculum Charitas*) writing before Geoffrey of Monmouth, who uses the form once, himself, in his *Vita Merlini* (line 930). Added to this there is the interpretation of the name 'Arturus' in terms of a word meaning 'bear' by one of the (late twelfth to early thirteenth century) 'Sawley Glosses' to the *Historia Britonum* (Dumville 1977: 19-49; 1972-4: 369-80) and also the use of the word *arth*, 'bear' as a poetically descriptive term for Arthur in poems like *Ymddiddan Arthur ar Eryr*, "The Dialogue of Arthur and the Eagle", (in Haycock 1994: 297-312; part-trans., Coe 1995: 103-7) where he is described as "arth llu", 'bear of the host', and "arth gwr", 'bear of men'. This is one of the poems about Arthur which though quite late (perhaps twelfth century, preserved in manuscripts from the 14th century) has the feeling of authentic archaic tradition about it. Of course the word *arth*, 'bear' not only has cult associations but also those connotations of strength and ferocity that make it especially appropriate to any kind of 'deity in martial mode', 'divine protector of a people in

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times of strife' or 'superhuman divine hero'. In fact, it is precisely as a kind of 'superhuman warrior', that (as we shall see) Arthur is characterised, in the early sources.

If this theory is correct then we might expect to find other instances[19] of a reinterpretation of substrate *ar(t)-* in terms of Celtic *art-*, 'bear'. One thinks of Irish 'Art' as a name for warriors and for figures of pseudo-history and therefore also, very possibly, mythology. Of course the kind of ultimate origin we are suggesting would be hard to detect but we can note that perhaps the most famous amongst the 'Art's of pseudo-history were 'Art', the father of 'Cor(b)mac (mac Airt)', a supposed high king of Ireland and 'Art Corb', an ancestor figure of the Deisi: the association of both 'Art's with a figure named in 'Corb-' (for *corb*, Vendryes: C-207, 209) might not be a coincidence, and, further, might remind us of our typical association of toponyms (and related figures) in *ar-* with those in *kar-* , or more loosely *k-r-*. The hypothesis would be that names of prestigious mythological import from the substrate would tend to be perpetuated on that basis but would then become liable to reinterpretation in terms of the new language. The association (that had its basis in their names in the old language) between figures would remain even though now their names (in this case 'Art' and 'Corb-') were not philologically related.

One might note further that the Demetian branch of the Deisi spawned an early 'Arthur' (Bartrum: 4, 10) while 'Art mac Cuind', the high king, fought his last battle of 'Cath Maige Mucrama', against a 'Lugaid' (and was killed in it by another - but possibly duplicate - Lugaid: O'Daly: 11-12, 57): this might bring to mind the typical association of our figures in 'Ar-' with those baring the divine name 'Lug(us)', or derivatives thereof, as alluded to in my earlier paper (Thornhill: 493-4). It is possible that one can find the same association in the legends surrounding Arthur, himself, if we interpret Geoffrey's Lucius,[20] (who

[19] Toponyms apparently containing *art-*, 'bear' like the river name 'Authre' < *'Artara', in the 'pagus Artintia' (Dauzat 1960: 165-7) might represent (re-interpretations of ?) our toponym.

[20] *Historia Regum* IX.15-X.13; Bromwich 1978: 416-18. Loomis (1949: 187-90) argues the derivation Lucius < Lwch < Lug, at some length. The

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is an enemy to Arthur, as Lugaid is to Art) as ultimately derivative of 'Lug-': something that is not impossible if we allow for the multiplication of divergent derivatives in a storytelling context and the same kind of evolution by assimilative mutation that we have proposed in the evolution of the name 'Arthur', itself. 'Art mac Cuind', meanwhile, has a parallel otherworld adventure to that of Arthur (Best 1936) and although this kind of thing is true, also, of countless other figures, it is interesting that Art's 'Land of Wonders' features a 'Morgan' to match the 'Morgana' of the 'Otherworld island' associated with Arthur (Best: 499-501; *Vita Merlini* l. 920). Of course, much can be attributed to coincidence, especially in a context of mythology where the same patterns are repeated over and over, but while none of the above can be seen as at all conclusive it is perhaps worthwhile demonstrating at least the feasibility of the idea that the Irish 'Art' is a kind of 'distant relative', or parallel evolution, to our British 'Arthur', along the lines that we have suggested.

There still remains the final and most problematic stage: to explain why we have the specific form 'Arthur', rather than just 'Arth', or any other name in 'Arth-'. After all there seem to be other names in 'Arth-' that look like more natural, or more common, Celtic forms, such as 'Arthmael', 'Arthgen' or 'Arthwy'. 'Arthur' looks more like the derivative from Latin Artorius that it is generally assumed to be, and obviously such a name could easily have been subsequently understood as having included *arth-*, 'bear'. A derivation from *arth-gwr* (< *art-u̯ur*), 'Bear-man' has been proposed (e.g. Griffen: 80-90) and one could compare the "arth gwr", 'bear of men' in the *Ymddiddan*, as mentioned above. But this would have given an 'arthwr' and, even if understandably Latinised as 'Arturus' one might perhaps have expected some instances of that form in the vernacular tradition that was closely associated with a living oral tradition. More important, a name with

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'Llacheu', who is Arthur's son in Welsh tradition might have a related origin: for the suggestion 'Llacheu' belongs ultimately to a range of variants, my note 31.

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these two elements does not seem to be at all common: one needs to find some kind of credible explanation for why this uncommon form was the one that came to dominate in the tradition. Otherwise the obvious Latin derivation, combined with the consistent historical context could be judged to make a 'historical' Arthur still a very credible contender to represent the origin of the legend.

That 'historical context' needs a closer look. First of all it was persistently a part of the legend alongside the more fabulous, probably mythologically-derived elements that we have highlighted above, and was enough to convince William of Malmsbury who makes very clear that there were these two very different aspects of the legend in his time.[21] Second, it is true that it does seem to explain some characteristic features of the legend.. Arthur is placed more remotely in time than many Welsh heroes (Urien and the men of the North, Maelgwyn) which might explain why he appears relatively rather shadowy and ill-defined in the tradition: not figuring in any of the traditional (pre-Geoffrey) genealogies, for instance (Bromwich 1978: 274). This also meshes with the pan-Brittonic nature of the legend since Arthur will have been active before the British fragmentation (into Breton, Cornish, Welsh and Cumbrian or Strathclyder) had proceeded very far. Most of all, he was placed at a crucial historical horizon between the early medieval Celtic world and the now forgotten and almost unimaginable world, of Roman Britain. This was a 'horizon' that was also, of course, resplendent with the glories of a lost age in which the (united ?) Britons had triumphed militarily over the Saxon intruders into their island in a way they never had since. This all goes quite a long way towards explaining the power of the legend in Brittonic-Celtic lands. Furthermore it would seem to support rather strongly the arguments for seeing Arthur as a historical figure because why would a timeless deity be associated with a

[21] William of Malmsbury, *De Gestis Regum Anglorum* 8, in Stubbs 1887: I, 11: "This is that Arthur, of whom the Britons fondly fable, even to the present day; a man worthy to be celebrated, not by idle fictions, but in authentic history. He, indeed, for a long time upheld the sinking state, and roused the broken spirit of his countrymen to war". This 'dual' aspect to the legend is repeatedly emphasised by Padel: 2, 4, 19 etc...

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particular historical period ? However this explanation does require that there was some very powerful reason why this one figure should have come to stand for all the glories of that lost age.

It has always been the great problem for the 'historical' Arthur that what appears in the *Historia Britonum* and *Annales Cambriae* to be his great victory at Badon, does not so appear in Gildas[22] and even seems to be associated, in this much earlier source, with a completely different figure, one Ambrosius Aurelianus.[23] Moreover this latter figure appears in the *De Excidio* as precisely the kind of figure one would expect a historical Arthur to have been. This cannot be emphasised too much. Gildas mentions precious few people by name in his historical account (a few more in his contemporary denunciations) and of those only the martyrs in positive terms. Ambrosius is absolutely exceptional as a secular figure described in glowing terms. The explanation would appear to be that he was indeed largely responsible for the recovery of the scattered demoralised Britons and the turning of the tables against their heathen Saxon foe, in just the way that Gildas describes. Attempts have been made to restrict his activities to some limited part of the island[24] but the impression that Gildas gives is that he was not only an

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[22] Jackson (1959: 3) argued "what English bishop, castigating the vices of his compatriots about 1860, would be so clumsy as to allude to "the battle of Waterloo, which was won by the Duke of Wellington ?"". This somewhat obscures the fact that our ecclesiastic, Gildas, had been in the course of giving a potted history of Britain: it is certainly possible to find tolerably credible reasons for Gildas's omission of a historically important Arthur but there is little doubt that on the basis of Gildas alone one would naturally assume that Ambrosius was both the victor of Badon and uniquely outstanding for his role in bringing about the British recovery. (Only a very doubtful source from about 300 years later might incline one to think otherwise !)

[23] Padel (pp.16-18) has demonstrated that the paragraph division that might suggest that someone else was responsible for the victory at Badon almost certainly did not exist in the original. This makes it more likely, if not certain, that Gildas intended Ambrosius as the victor.

[24] Neither the chronological (cf. Sims-Williams 1983b: 14) nor geographical deductions of Dumville (1984; following, in part, E. A. Thompson 1979-80) -

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entirely exceptional individual but associated with a revival of the Britons as a whole. This is just the way we would conceive of Arthur. The existence of TWO such figures is not impossible but would certainly seem to stretch credibility. On this basis some commentators have, not without reason, advanced the hypothesis that Arthur really WAS Ambrosius. But this leaves the problem of the two different names and corresponding, apparently entirely separate, traditions as they appear in sources from the *Historia Britonum* onwards. Solutions to this problem - along the lines that 'Arthur' was some kind of 'special' or 'code' name for Ambrosius - are too 'convenient' and contrived to be credible (cf. Chambers: 169).

What is especially curious is that Ambrosius as he appears in the *Historia Britonum* (c. 40-2) is very much a figure of folk-tale, featuring in a fantastical and thoroughly non-historical tale, while it is Arthur who fills the credible historical role as the leader responsible for turning the tide against the Saxons. True, it is possible to see many traces of Gildas's historical 'Ambrosius' in the 'Emrys' associated with a symbolic representation of the struggle between Saxon and Briton (the fighting dragons), and described as the son of a Roman consul as well as some kind of overlord. His direct involvement with Vortigern seems to conflict with Gildas who does not give the impression they were contemporaries or, at least, that their spheres of action overlapped in any way: yet since the two play the roles of a villain and a hero respectively in Gildas's account one can understand how that might have served as the germ for their juxtaposition in derivative tales.[25] One can understand how Ambrosius's major historical role might have faded into the background in such tales as it has in the one told here: but it is curious that that major role has been taken over by someone else, namely Arthur. Arthur's battles fill the gap between Hengist's revolt and later events in the North: they evidently constitute the *Historia*'s

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in his unhappy attempt to wrest these from Gildas - convince. But this demands a fuller discussion of Gildas than we can give here.

[25] To transpose that juxtaposition back into authentic 5th century history, as many have done (Morris 1977: 71 ff.; Myers 1960) is surely very unwise.

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version of the British revival, as described by Gildas. If Arthur was a genuinely separate historical character there is little here that credibly defines him as such: he seems rather to be a duplicate of (the original Gildasian) Ambrosius even as far as apparently displacing him as the victor of Badon.

It is important that if one denies Arthur the victory of Badon - as did Thomas Jones (1964) - and in general, the more minor a figure you make the 'historical' Arthur into having been (in order to explain Gildas's omission and to accommodate an at least equally important Ambrosius) then the harder it becomes to explain the vastness of Arthur's subsequent reputation[26] (and why it was that he - and not Ambrosius - came to stand for the glories of that lost age): at least without invoking factors other than simply the lasting impression left by a remarkable historical career (as Julius Caesar, Alexander the Great, etc..).

There might just be here, some advantage in our theory that would make Arthur a 'deity' rather than a historical personage. The point is that if Arthur represents some kind of deity regarded as in some way responsible for Ambrosius's victories - or the victories of the Britons in general, including his - then it might be easier to square with the kind of rather close parallelism that there seems to be between the two. We would not, then, have to explain why it was that some separate, perhaps originally rather minor figure, had come to usurp the role of Ambrosius; or construct some rather elaborate theory for why it was that Gildas made Ambrosius look like the single outstanding leader when really it was Arthur.

Though Arthur fills the credible historical role in the *Historia*, the way in which he is characterised is far from reassuringly historical. Both in the *Historia* and in early poems or those that have the flavour of archaic tradition like the *Ymddiddan Arthur a'r Eryr*, Arthur appears as the 'supreme warrior', par excellence. In fact it is rather surprising that

[26] As Jackson (1959: 3) appreciated: "this decisive victory was credited to Arthur .....and would account well for his fame as the supreme conqueror of the English".

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more is not made of the way in which Arthur is consistently and exclusively characterised in terms of his martial prowess in the earliest sources, without ever showing any of the attributes of a great ruler. He is neither 'rex' nor 'princeps' nor 'Guletic'. He is 'dux bellorum' or 'miles', and he kills nine hundred and sixty men in one charge, all on his own. It is rather hard to think of historical people characterised in this way: much easier to think of a war-god, or a divine hero, a Hercules or a Cu Cuchulain. It is hard to imagine that a real person would have been remembered purely for their martial prowess rather than for their great power: and one would expect some trace of that power or status to have survived in the tradition. For all that Ambrosius has been 'mythologised', or absorbed into an atmosphere of story-tale, he remains 'Guletic' (or "rex inter omnes reges"): a title not given him by Gildas but entirely consistent with the role Gildas ascribes him.

Meanwhile, as far as this characterisation reflects on the derivation of Arthur's name - as discussed above - it does suggest a rather direct relationship between his character and the name understood as containing Arth, 'Bear', (as suggestive of fury in battle) which would not be so likely to be the case if he had just happened to have had such a name (or a name capable of such an interpretation) from birth. It would seem to make it rather more likely that the name does represent, or has evolved from, some kind of attempt to use the name of the animal to express fury in battle, and that, as such, it evolved, somehow in tandem with the martial characteristics that define the nature of the figure, himself (in the early sources).

There can be no doubt, anyway, that the way the 'battle-list' of the *Historia* describes Arthur's martial prowess represents some kind of authentically archaic tradition; it is matched by his description as 'miles' in the localised legends that are recorded in the *Mirabilia*, and by the way he appears in early poetry. Less certainly authentically archaic is the way he is described as such an outstandingly Christian hero. Whilst one can readily understand the motives of ecclesiastics in 'Christianising' Arthur in order to point up the historical contrast between the Christianity of the Britons and the paganism of the Saxons in earlier times it is also true that that historical reality provides a

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thoroughly credible context for the British military effort - and all those (mortal or divine) closely associated with it - to have been very closely identified with Christianity. We are dealing with a context that involved the bringing together of scattered remnants (*De Excidio* 25) from (probably the greater part of) the old Roman province who will have needed Christianity as something to rally around; the situation is rather different to that represented in the early poetry associated with the Gododdin, for instance, for whom the unifying factor will have been the old tribal traditions inherited (fairly intact) from pre-Christian times.[27] Ambrosius, himself, must surely have been a leader very closely identified with Christianity[28] in order to earn the glowing reference bestowed upon him by Gildas. Looked at in that light the characterisation of Arthur as Christian hero is another aspect of his 'parallelism' with Ambrosius.

Looked at in the light of our developing theory: if Arthur represents some kind of divinity, then, necessarily for the period, that would have to have been a somehow Christianised divinity. This is precisely the kind of thing we have proposed for our pseudo-martyr, envisaged as embodying parallel cult traditions: Aaron. Furthermore it can be suggested that this type of syncretism was an essential part of the process of forging an effective (if short-lived) unity among the Britons : for many of whom pagan tradition was still strong even as they aspired to the superior values of Roman civilisation (and of the still impressive Late Antique civilisation, overseas) with which Christianity was now becoming ever closer identified.

At the very least, if the image of Arthur as Christian hero can be suspected of being an ecclesiastical invention it cannot be assumed to be so (as does Jones 1964: 9) and the possibility that it was part of the

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[27] So also for the Northern tribes associated with Urien: while, in general, the customs and mentality typical of those Celts from the Northern and Western (=Ireland) periphery who had preserved their warlike traditions relatively intact from the pre-Roman period, would have come to dominate in the later (less 'neo-Roman' but more classically 'heroic') period.

[28] He appears as a 'builder of churches' in Geoffrey's *Historia Regum*, which might reflect late tradition: Wright: c. ; Thorpe: VIII. 9.

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original poem assumed to underlie this part of the *Historia*, remains. (If you take away the Christian element, of course, precious little of any such poem remains beyond a bare list of battles). The fact that certain details of that representation, such as the carrying of the image of the Virgin, seem very out of place in the fifth or sixth century and very likely do represent later adaptation do not disprove that representation in its broader outlines: the differences between the *Historia* and the *Annales Cambriae*[29] show that they represent a tradition that was subject to alteration in a context of either written or oral transmission (Charles-Edwards: 27-8; Padel: 14; my note 44).

The *Annales Cambriae* do, unlike the *Historia*, provide the one big 'Arthurian event' that appears to be quite original and not just an elaboration of the British revival that Gildas associates with Ambrosius. This is the battle of Camlan. It is important that this is something that it is not at all difficult to give a 'mythological' interpretation. Dreadful 'Final Battles' with the 'deaths' of many deities, are well known from other religious traditions - such as 'Ragnarok' in the Teutonic - while awfully destructive battles between gods are frequent in Irish tradition, 'Magh Tuiredh' being a famous example (Gray 1982). It is worth noting that the Fenians have their final climactic battle of Gabra (O'Kearney 1853), while Art, son of Conn (understood as a 'distant relation' of Arthur or not), met his end at Mucrama, a battle-site evidently (like 'Magh Tuired') with important 'Otherworld' associations.[30]

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[29] In the *Historia* Arthur carries the image of the Virgin on his shoulders (= shield, note 42) at the battle of 'Castello Guinnion'; in the *Annales* he carries the Cross of Jesus on his shoulders/shield at the battle of Badon.

[30] O'Daly 1975: 49 (c.34); while 'Magh Tuired' = plane of Towers, cf. the 'Tower of Conan' at the battle between the 'Nemedians' and 'Fomorians' and the Tower of the Otherworld, e.g. *Historia Britonum* 13. In Irish tradition, partly because tribal groups are identified by their patron deities, a confused history of the settlement of various groups is conflated with the mythology: but the above suggests these battles have more to do with the latter (cf. Gray 1982).

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It is possible to suggest that not only Camlan has its roots in such a mythological tradition but also that the Battle of Arfderrydd (*Annales Cambriae* s.a. 573 and the 'Myrddin' poetry, see Jarman 1991) represents a parallel evolution - or if this is ultimately historical then that the way it is represented has been effected by such a tradition. Both battles are very specifically characterised as supreme examples of tragically destructive internercine strife. It is just possible the name, 'Camlan' represents an archetypal *cadlan* - 'battle(field)' - of tradition, assimilated to a particular place-name, or localised context. For this, the Camlan near Mallwyd, Merioneth, that was identified as the battle site by medieval Welsh tradition, would be the number one candidate (Sims-Williams 1991: 50-1). Bromwich (1978: 276) notes that Camlan is much more prominent than Badon in the tradition: this might in fact reflect the greater appeal of the mythological-derived, storytelling motif over the merely historical (and could be said to be paralleled, in a sense, by the far greater ultimate prominence of Arthur himself, compared to the historical Ambrosius).

As regards our suggested parallel traditions associated with the martyr Aaron, and his partner Julius, it is relevant that Camlan, as it appears in the *Annales*, was evidently famously associated with the death of two prominent figures. Medraut certainly does not match up in any obvious way to 'Iulius' but on the other hand the earlier sources do represent him as an equivalently noble figure to Arthur - rather than as a villain - so he may credibly have been originally his companion rather than his enemy. As with most mythical traditions there were doubtless countless versions and much interaction between them: leading to endless variation of the central protagonists. The fact that Arthur, in the context of his violent death, might have been perceived as 'one of a pair', could be significant.

We should really add a word about the sources of these two Arthurian entries in the *Annales*, here. I am taking it as significantly well demonstrated already that they represent late interpolations into annals of ultimately Irish origin (Hughes: 253-8; Dumville 1977b: 176) from a source that was not itself annalistic but which, in the case of the Badon entry at least, was closely related to the one that lies behind

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chapter 56 of the *Historia Britonum*, if it is not actually derivative of that (Charles-Edwards: 25-8; Jackson 1959: 5). There are plenty of parallels for this kind of thing in the earlier entries of the Anglo-Saxon Chronicle (Sims-Williams 1983b: 27-30), for instance, or the earlier parts of the Irish annals, and, as with those, the dates given are not something we need treat at all seriously: the rather late dates given for Arthur's activities might represent an attempt to fit them in with those of an Ambrosius regarded as active earlier.

The source of chapter 56 of the *Historia Britonum* has - as mentioned above - long been assumed to have been a vernacular 'battle-listing' poem (Chadwicks: I, 154-5; Jackson 1959: 7; Dumville 1977b: 188). Although it appears this must have existed in written form prior to its inclusion in the *Historia* (my note 44) it is likely to have had its origin in, and owed its fundamental genesis to, an oral poetic tradition. This gives us the likely context, at least, for the problem we have so far ducked: the explanation for the particular form 'Arthur' rather than just 'Arth', or any other name in 'Arth-'. The context will have been that orally transmitted 'poetic' tradition which evidently lies behind our earliest sources.

It is important to be aware that in this context names could change or evolve - in ways other than those that characterised the language as a whole (normal 'philological change'). This is indicated, for instance, by the kind of different, etymologically distinct, yet vaguely similar, names we find in the Continental Romances for obviously the same character in Welsh sources. Names like 'Gauvain', or even 'Gualguanus', for 'Gwalchmai', or 'Perceval' for 'Peredur' do not look like merely 'loose approximations' made by one language for a name found in another[31] since these are surely not the most obvious names that would be substituted on the basis of sound assimilation alone. It seems more likely that an actual process of divergent evolution has been at work, most probably in the context of a separate Breton branch of the pan-

[31] Cf. Bromwich 1978: 490. Another example is probably LLacheu/Loholt, even though Bromwich, 416-8, thinks these are unrelated (cf. above, with note 20).

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Brittonic tradition, from which the names passed into French (for the strength of the Breton oral tradition, Loomis 1959b: 52 ff.; Caerwyn Williams: 259-61). That process of divergent evolution would probably be by 'assimilative leaps': in the case Gwalchmai/Gawain, for instance, assimilation to 'Walwedia', 'Galloway', (Gillies: 61) and to the ending of a name like Yvains (< Ewen, Owein)[32] have both been proposed. The very phrase oral 'transmission' implies, anyway, a process that could be flawed and if that was not something that extended to actual 'names as such' (which, of course, changed only in the ways the rest of the language did), it could extend to names as applied to particular figures, as well as, of course, the (other) characteristics of those figures. The suggestion that certain figures are 'related' and belong to a range of 'variants'[33] with an ultimate common original (often some figure of Celtic mythology along the general lines, proposed by Loomis), may not be an illusion, even if the era that saw the greatest proportion of 'divergent mutation' may have been a very early (and therefore inaccessible) one (before the sixth century "watershed", see below with note 49).

To find further clues to the oral, poetic, background that lies behind our early sources we have to turn to the vernacular poetic sources for Arthur that are available to us. Though these are later than the Latin sources some of them have every appearance of perpetuating an ancient

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[32] Bromwich: 371. The Modena archivolt has 'Galvaginus'; William of Malmsbury, 'Walwainus'. The existence of the name 'Ualcmoe' (= 'Gwalchmai') in early Breton sources is no proof that this was the form earliest appropriate to our figure. Loomis (1949: 146-8) may well be right about this figure having other antecedents in Welsh/Brittonic tradition, if not, necessarily, precisely those he proposes.

[33] E.g. Geoffrey's Modred appears as 'Morvan' in the *Chronique d'Anjou* (Fleuriot 1980: 226-9): cf. the 'Mardoc' of the Modena archi-vault (all three 'enemies' of Arthur and representing a Breton/continental tradition). Cf, again, the 'Madauc' of the *Ymddiddan Arthur a'r Eryr* whose special close association with Arthur (apparently his brother) might match the earlier recorded one of Arthur with Medraut, as reflected in the *Annales* record of Camlan. Cf , in general, my notes 31-2, 35.

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tradition and this must be essentially the same tradition that the Arthur of the original battle poem belonged to (and from which the 'record' about Camlan was extracted). We have already mentioned the *Ymddiddan Arthur a'r Eryr* as seeming to preserve an ancient tradition and one figure who appears in this poem, 'Uthr Pendragon', seems especially likely to offer us some helpful clues. This is because as the reputed father of Arthur he is likely to have had at least some kind of especially close relationship with Arthur, while, coincidentally, his name is one that sounds rather similar. It is not unreasonable to speculate whether there might be some link between these two facts. Uthr's role as Arthur's father may not pre-date Geoffrey of Monmouth but on the other hand it is vouched for by the *Ymddiddan* as well as, very likely, by the *Marwnat Uthyr Pen* of the fourteenth century 'Book of Taliesin' (Evans: 71-2; Sims-Williams 1991: 53-4, 57-8). Uthr Pendragon simply as a figure of Arthurian tradition certainly pre-dates Geoffrey since he appears in the probably eleventh century poem *Pa Gur* (Jarman 1982: 66-8; Sims-Williams 1991: 38-46; Bromwich 1978: 520-3). The important point is that even if the filial link was invented by Geoffrey there must have been some reason for it: some especially close relationship that had its roots in the oral-poetic evolution of the legend.

In that context it is significant that Uthr's name is also an adjective, with a meaning, 'terrible' (possible etymologies in Pokorny: 73, 1107) appropriate to a context of war-like poetry and in particular to the 'supreme warrior' Arthur. It also corresponds rather precisely with the connotations of the name 'Arthur', understood as containing '*Arth*', 'bear'. It is true that 'Uthr' is recorded as a personal name (Bromwich 1978: 522) but if the heroic figure was an anciently established one there is every possibility that the use of the word as a personal name was a spin-off from its use as an (epithet-derived) name in heroic tale. At any rate the literal meaning certainly suggests the personal name evolved out of an epithet in a warlike context, and it is surely its appropriateness as such an epithet that is relevant to us in our consideration of the origin of the Uthr of Arthurian poems and stories. The name in this context would seem to be parallel to 'Arthur' seen as deriving its relevance from the literal meaning of '*Arth*', 'bear'.

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There is the possibility, then, that 'Uthr' and 'Arthur', as the names appropriate to heroic figures, evolved not only out of the same poetic milieu but in some kind of very close and interactive relationship. The variant form for *uthr*, *aruthur*, increases the possibilities for alliterative word play, in this context[34] . Given the theory we have outlined so far we would have to assume that Uthr was, in some way, a poetic 'spin-off' from Arthur - or a figure in 'Arth'.[35] By way of comparisom one might compare the duplication of ancient deities by the evolution of an epithet into a name for a separate figure.

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[34] Cf. Kemp Malone 1924. In the extant sources Verse 6 of the *Ymddiddan Arthur a'r Eryr* perhaps comes closest to the kind of alliterative word play we might envisage: "Arthur glydyfawc aruthyr / ny seif dy alon rac dy ruthr / mi yw mab madawc uab uthyr"; "Arthur of the terrible sword, / your enemies stand not before your rush. / I am the son of Madog son of Uthr".

[35] In this context it is also worth noting the name 'Gwythur', appropriate to a figure who is also linked with Arthur - though in a much less convincing way than Uthr: Bromwich: 403-4; Sims-Williams 1991: 49, 53. This is another similar sounding name and one that, like Arthur, has an obvious possible Latin derivation (from 'Victorius', a more common Latin name than 'Artorius'). It might be at least possible, though, that such a name could have been reached by a process of assimilation in a poetic, or story telling context, characterized by the multiplication of figures by divergent evolution from a single original: so that Gwythur is another 'spin-off' from Arthur (like 'Uthr' ?). A parallel might be the primary association of Gwythur (map Greidyaul) with a figure in 'Guin-' , i.e. Gwynn ap Nudd (*Culhwch ac Olwen*, see G&T Jones: 90, 107, 112) and Arthur's with Guin-huifar. It is also possible, of course, that we might be dealing with figures of entirely separate origin attracted together due to their alliterative compatibility. Then again their point of common origin might lie in the theo-toponymic background we have hypothesised for Arthur: perhaps, though, with some mutual influence (in a poetic-oral context ?) in their subsequent evolution. All this is highly inconclusive but serves to illustrate the likely complex interrelationships between figures that have evolved out of an oral tradition, and, in particular, the suggestion that the figure, and name, 'Arthur', are to be seen in this kind of context: so that our hypothesised relationship between Arthur and Uthr might not be totally unique but part of a larger pattern.

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If this hypothesis is correct we might expect to find some degree of detectable parallelism between Uthr's career, as described by Geoffrey (but based on traditional sources ?), and that of Arthur's, of which it would ultimately be a duplicate. Arguably one indeed can. The battle of 'Mount Damen', fought by Uthr, looks suspiciously like a parallel (= derivative duplicate ?) to Arthur's famous battle of Mount Badon. Obviously the details of the battle are different to those of Arthur's battle at Bath (for Badon) but one would hardly expect otherwise. Then there is Uthr's defeat of the Irish king Gillomanius which is rather closely paralleled by Arthur's of the Irish king Gilmaurius (Wright: 130, 153; Thorpe VIII.12, IX.10). Both might have their origin in a tale about a visit of Arthur to the 'Otherworld', which, in this context, was sometimes represented by Ireland (Sims Williams 1991: 55-6; my note 2). Uthr's association with Stonehenge reminds us of Arthur's characteristic association with prehistoric megaliths: and this is especially relevant in terms of our Arthur < 'Art', 'stone' hypothesis. Finally the appearance of a dragon ('lighting up the countryside with the glare of its eyes') to Arthur in a dream is paralleled, in a loose kind of way, by the appearance of a dragon, in the sky (from whose mouth 'stretched forth two rays of light') - to Uthr (Wright: 164, 133; Thorpe: X.2, VIII.14). Furthermore, one might speculate whether the latter story that links the fiery dragon with a 'star of great magnitude and brilliance' originally had something to do with 'Arturus' interpreted as 'Arcturus', the name of a star: relevant here is the astral reference "At ubi Arctos temonem uertere cepit..", "Then, as the plough began to revolve its pole..." (Wright: 136; Thorpe VIII.18) just before Uthr's battle of 'Mount Damen' (= Arthur's Badon ?). Of course the duplication, or multiplication, of figures is certainly typical of Geoffrey: arguably, it is so of the tradition that lies behind him as well so that such a phenomenon might explain this parallelism between Arthur and Uthr, which surely goes back to the sources that Geoffrey used.

The important point to make here, though, is that even if 'Uthr' is seen as basically an off-shoot, or duplication, of 'Arthur', it is not impossible that there might have been some influence the other way, from Uthr on the precise form of the 'Arth-' name, under the influence

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of alliterative compatibility. This might begin to offer some kind of explanation for the fact that we have an 'Arth -(u)r', rather than any other name in 'Arth-'.

Uthr, however, has still more to interest us, in the form of his epithet, 'Pen Dragon'. Judging from early Welsh poetry in which the words *dreic* and *dragon* (from Latin *draco* and oblique case *dracon*, respectively) were very commonly used figuratively for 'warrior (hero, or leader)', this means simply 'chief warrior' (or 'chief of chiefs'), and as such is rather unremarkable. Geoffrey of Monmouth, however (Wright: 135; Thorpe VIII.17), interpreted 'dragon' in a more literal way and took the epithet to mean 'Dragon's head' (*pen*, like English 'head', could mean 'chief' as well as designating the part of the body). He furthermore associated it with a type of military standard that consisted of, precisely, a 'dragon's head' and, originally at least, a windsock-type flexible extension, attached behind. Such a standard will have been known to Geoffrey from his own time, or at least from as recently the Battle of Hastings where it was used by Harold's men, as the Bayeux tapestry reveals. Meanwhile Henry of Huntingdon (ed. T. Arnold: 121, 184) describes its use by Edmund Ironside in 1016 and the men of Wessex as early as 752 and Tatlock (1933b: 225; cf. Lofmark: 47) thought he probably had an early source for this. The fact that Geoffrey has Uthr place one of his standards at Winchester might seem to suggest he has the dragon standard of English or Wessex tradition, in mind. Again, the way that Geoffrey describes the standard, at his battle of 'Sessia' (Wright: 168; Thorpe: X.6), set up behind the army as a focus for re-grouping, seems to be influenced by the way Harold and his men evidently used it at Hastings. We might expect that Geoffrey would rely most on his contemporary, or near-contemporary world for this kind of circumstantial detail that would bring his History to life. But has Geoffrey, as Tatlock (1933b: 225-7; 1950: 37-8) argues taken the dragon standard only as something familiar to him from his own time, or from English tradition, and is it this, alone, that has encouraged his (genuine or willful) misinterpretation of Uthr's epithet ?

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The 'dragon standard' had a long history, having been borrowed by the Romans from the nomads of the steppe and used by them as a cavalry standard, for which the 'windsock' design was most appropriate. By Late Roman times the word *draco was* used to denote the military standard of the cohort (by comparisom with the eagle for the legion) and, as Carl Lofmark observed it would have been the cohort standard that was most often seen in Britain (Tatlock 1933b: 223-4; Bromwich 1978: 93; Lofmark: 40-2)

In these circumstances it would not be surprising if the use of such a standard was continued by the post-Roman Britons. As has long been recognised various bits of evidence converge to suggest that cavalry, probably of a type imitative of the Late Roman catafracti, was their most important military arm[36]: it was with cavalry that, at any rate the original, wind-sock type, dragon standard was used and so this might be seen as something which will tend to have favoured its use. More important the use of such a standard is likely to have been one of the many ways the Britons of that time seeked to preserve and express their 'Roman' identity: they evidently did this in various ways, such as the use of old Roman titles like 'Protector' (Jackson 1953: 149-191, especially 175), but may have been especially fastidious in preserving old Roman military practices and equipment. Procopius (*History of the Wars* 5.12; Fleuriot 1980: 253-4) tells a story about the "descendants of Roman soldiers", who fought alongside the "Arborici", or Armoricans, who did just this: "they always carry their own standards when they enter battle, and always follow the custom of their fathers". This story sounds more like one designed to explain an observed phenomenon than one that is literally true and it is tempting to guess that the 'descendants of Roman soldiers' were actually Britons following, or even reviving, traditional Roman military practice: given the certainly close association of the Britons with the Armoricans at this time and the fact that (under

[36] There are the mounted warriors of *Y Gododdin* (cf. the Picts as depicted on the Aberlemno stone) and of *Gereint* in the early poetry, the many mentions of horses and horsemen in the triads (nos. 18, 38-44, 62) and the fact that cavalry was the major arm of the Bretons at a later date.

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Riothamus, see below) they fought the Arian Visigoths which Procopius describes these soldiers as doing. Fleuriot (1980: 179-80, 235, 272-3) quoted the Life of St Dalmas as referring to a "legio Britannica", near Orleans, around 530, and noted that some early laws refer to the Britons as "Romani".

As we noted above the dragon standard was used by the Anglo-Saxons not only at Hastings but probably at a much earlier date. There is every possibility that the men of Wessex borrowed it from the Britons as they did the names of some of their kings ("Cadwallon" etc..), their leading 'ancestor-figure' (Cerdic < Caraticos) and doubtless many other things. A dragon-type creature has a place in native Germanic tradition, as it does in so many other (Lofmark 10-37, 48; Tatlock 1933b: 224) but all the Germanic peoples were impressed by the military splendour of Rome and adopted Roman military equipment.. The dragon standard, then, will have had a resonance in native Germanic tradition but its use both in England and by the continental Saxons must have been inherited ultimately from the Romans: its popular appeal would explain why the Latin-derived word 'dragon' largely displaced the native German equivalents (Simek: 64-5). In fact the early sources show the use of the standard by Romans and 'barbarians' alike (Sidonius, *Carmina* 2, 232-3;5, 402-7) and there is every chance that it was, or became at some stage, part of the 'common culture' of sub-Roman Britain.

It would seem, a priori, more than likely that it was in the context of its use to denote the military standard that the word *draco* was passed on to the Britons when they adopted the word in the fifth (Sims-Williams 1984: 189) century. As we have seen it was used for a warrior and Ifor Williams (1910: xiv-xx; 1946) suggested that the warrior became identified with his standard, or more specifically 'leaders of warriors' with the standard that also led warriors, into battle. Rachel Bromwich (1978: 93-5), however, argued that since there is no reference to the dragon standard in early Welsh literature then its figurative use for a warrior is purely a factor of its connotations of ferocity and is simply analogous to the use of other animal-names like 'bear' (as we have seen above) and 'hound' as synonyms for 'warrior'. But, as Tatlock points out (1933b: 231) the nature of the Welsh terrain and

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Welsh 'guerilla tactics' would explain why the 'dragon-standard' (or the cavalry tactics of the sub-Roman Britons ?) was no longer used by them. In those circumstances the purely figurative use of the word might have come to take over and any original sense of 'military standard', lost. It is likely enough that such a meaning would, anyway, have merged with that of the dragon as a fierce beast in line with the other such beasts that warriors were compared to: indeed the ferocity and power of the beast had always been part of the symbolism of the standard and the two meanings will always have been closely bound up together.

It is important, though, that the word *draco* is used for 'leader, military leader' from the very earliest poetry onwards (Lofmark: 43-5) while none of the other animal words used for 'warrior' have such strong connotations of 'leadership'. One can argue for an evolution from 'warrior', to 'hero', to 'leader' but one wonders if that is not unnecessarily complicated and indirect given the Late Roman use of the word for a military standard and of the obvious notional link between the standard and leadership in battle. In fact that link is confirmed in a late Roman context by an especially close association of the 'dragon standard' with the person of the Emperor, himself (Tatlock 1933b: 223-4; Bromwich 1978: 93; Lofmark: 40-2) and its use, in effect as an 'imperial' as well as a 'battle' standard[37]. Sims Williams (1984: 190-1)

[37] Ammianus Marcellinus XVI, 10.7, 12.39; cf. Claudian, *Carmina* VII, 138-41, XXVII, 564-8. For its imperial associations in a Byzantine context, Tatlock 1950: 224. Gildas called Maelgwyn "insularis draco" (*De Excidio* 33) and though the island, here, is generally assumed to be Anglesey it is still possible that it is actually Britain and that the phrase conveys some connotation of 'national' or pan-Brittonic, leadership (as e.g. Rhys 1891: 8) that might be comparable to the 'imperial' associations it has elsewhere. Such an interpretation suits the context ("what of you, dragon of the island, you who have removed many of these tyrants from their country and even their life ?") better since that has reference to Maelgwyn's power over the other kings of the island of Britain (and note a few lines further on, "The king of all kings has made you higher than almost all the generals of Britain.") Gildas has previously used 'insula' to refer to Britain, and, given

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admits the likely influence of the standard in the borrowing of the word, *draco*, into Welsh, yet argues that this constituted a "morally neutral", artistic context. This seems to deny the probability that the word will have been borrowed with all its Late Roman connotations and, in particular those associated with its use in war: surely a consistent and dominant pre-occupation for the Britons/Welsh from the Roman period through to that of the earliest poetry.

Furthermore this interpretation of the origin and connotations of the word is one that makes the use of "dracones" to symbolise the military struggle of Saxons and Britons in the Emrys tale of the *Historia Britonum* (c. 42), especially appropriate, as Ifor Williams pointed out (all the more so if the dragon standard was used by both sides as we have suggested). The context would seem to require that Ambrosius's words have the force of a revelation, and this is all the stronger, the more 'extra' semantic connotations the word 'dracones' has over 'vermes': especially if the latter means, as Rachel Bromwich (1978: 95) argues, 'dragons' (in the sense of fierce reptilian beasts), arguing against Williams who suggested it stood for a Welsh word meaning any kind of beast. In fact Bromwich concedes that 'miltary standard' is one of the connotations of the word in this context , where it surely does not represent a learned reminiscence of the meaning it had in late Latin but rather reflects the connotations the 'dragon' still had in contemporary Welsh culture: if only in the context of stories about earlier times.

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that he is not writing in a local context it would seem more natural for him to have referred to Anglesey, actually by name, if that is what he meant. Jackson's objection to this interpretation (1982: 35, note 26) is based on presuppositions about a political situation we know nothing about. (That the Britons had some tradition of overlordship, inherited from Ambrosius as "rex inter omnes reges" and comparable to the Saxon Bretwaldship is by no means incredible.) Gildas would, however, also be using the 'bestial' connotations of 'draco' (in line with his description of the other kings as beasts), to offer a kind of ironic commentary on Maelgwyn's power and pretensions: cf. Sims-Williams 1984: 187.

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One can muster, then, quite a strong, if circumstantial, argument for a use of the dragon-standard by sub-Roman Britons and for the influence of that fact on subsequent tradition (Welsh and English). The use by the Welsh of a dragon standard, subsequent to Geoffrey, from the time of Owain Glendower at least, (Tatlock 1933b: 230, 233-4; Lofmark: 56-72) no doubt owes something to him, but it is almost certain that the 'red dragon' of the *Historia Britonum* also contributed to this (Lofmark 62-3) and that the subsequent use of the dragon by the Welsh as an actual national symbol came about because Geoffrey's popularisation of the dragon, and dragon-standard, found a deeper resonance in Welsh tradition. There must be the posibility, meanwhile, that Uthr's epithet, though doubtless interpreted as 'chief warrior', might, if it has very ancient roots, have had different associations at an earlier date – in line with those we have argued for the word *dreig/dragon*, itself – that associated it actually with a standard.

For Geoffrey, anyway, the dragon standard was clearly more than just something that was suggested by Uthr's epithet because he also associates it, as we have seen, with Arthur at his most impressive victory of 'Sessia'. That this is not just a case of Geoffrey using the dragon standard of his day as an impressive piece of paraphernalia to associate with his grandiose hero is suggested by the fact that he also associates Arthur in two other contexts with a dragon that has nothing (apparently) to do with a standard. First there is the dream that Arthur has about the dragon, evidently representing himself, that fights and defeats a bear (Wright: 164; Thorpe X.2). Second there is the detail included in Geoffrey's description of Arthur's preparations for the battle of Bath in which he puts on a helmet with a dragon's crest (Wright: 147; Thorpe IX.4) It is quite clear that many of the other details in this passage about Arthur's personal war-gear derive from traditional sources so if the dragon, here, does not also, it is rather unique.[38] Also,

[38] His shield, 'Pridwen' (cf. his 'ship', Pridwen, in e.g. *Priddeu Annwn*) bears an image of the Virgin : cf. *Historia Britonum* 56; for his sword, 'Caliburn' and spear, 'Ron', cf. 'Caledfwlch' and 'Rongomynat' in *Culhwch ac Olwen*, 159-60, Bromwich 1992: 64-5.

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since this battle is clearly Geoffrey's equivalent of Badon, it is one for which he may well have had a traditional source. It is possible to argue that even if a (perhaps only vague, generalised) association, here, with dragons belongs to genuine tradition it was Geoffrey who was responsible for converting that into one specifically with the dragon standard, as such. But it is hard not to suspect that the association with both dragon and dragon standard are part and parcel of the same original tradition.

Again, in the story about the star and the fiery dragon which terrifies Uthr (Wright: 133; Thorpe: VIII. 14-15) there is a dragon that is not (necessarily) specifically the one of the standard, associated this time with Uthr. In fact this tale is one that we have suggested above forms a loose parallel to the one about Arthur's dream of a dragon and which might well, itself, have been originally appropriate to Arthur: on this basis it was part of our argument that Uthr and Arthur were ultimately one and the same. This idea, of course, makes especially good sense of their both being associated with the dragon, and dragon standard. But it would also necessarily imply that this is something that goes back to a rather remote era (certainly pre-Geoffrey) before the two became established as separate figures, in the tradition. In the case of Arthur's dream it is tempting to associate the 'bear' with our idea that the name 'Arthur' had to do with *arth*, 'bear' (cf. Lofmark: 51) but if so there has been a considerable amount of corruption, evolution, or re-working, of the tradition (obviously Arthur cannot kill himself) which would, however, be compatible with the idea that the association of Arthur with both *arth,* 'bear' and with a dragon belonged to a very early stage of the tradition and were fundamental to it.

In any case both of these tales look like traditional ones which Geoffrey has found in his sources, and no doubt modified, but not invented from scratch. One might still argue that it is he alone who is reponsible for extending an original association of Arthur/Uthr with a dragon to one with a dragon standard but the two seem closely associated in his work and – given the origin and connotations of the word *dreig/dragon* as discussed above – one might suspect that this is an association rooted in earlier tradition.

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Of course how one views this all depends on the view one takes in general of the extent to which Geoffrey used his own imagination (as inspired, no doubt by various features of his contemporary world) rather than traditional Celtic sources. There is enough traditional Welsh material preserved to make Geoffrey's debt to that quite obvious but much less in the case of traditional Breton (or Cornish) material. There is, though, quite a considerable lobby behind the idea that Geoffrey was quite heavily dependant on Breton sources - that have, for the most part, been lost (Le Duc; Fleuriot 1980: 226-9, 236-7, 245-6, 277; Roberts 1991: 101; Caerwyn Williams: 203-6). Geoffrey Ashe, for instance, points out that the one part of the story which Geoffrey particularly identifies as coming from his alleged source ('in the British language') is Camlan and the rebellion of Mordred[39] which is, in turn, closely bound up with Arthur's expedition to Gaul, a tradition of which seems also to have been known by the author of the probably pre-Geoffrey Life of the Breton saint, Goeznou. 'Modred' is, in fact, the Cornish or Breton form of the Welsh 'Medraut' (Bromwich 1978: 455) and the argument that Geoffrey had a Breton source for at least this part of his History - possibly including Arthur with his dragon standard at 'Sessia'[40] as well as the dream of the dragon that Arthur had as he started off on the campaign - is quite a strong one. That Breton source may, as Geoffrey Ashe argues, have been based, in part, on traditions deriving from the actual activities of Britons in fifth century Gaul and that is also the context where Procopius had described the use of Roman standards. Then again, the fact that the Bretons had continued, unlike the Welsh, to use cavalry as their main military arm might seem to

[39] Ashe1981: 301-23. Contrast Tatlock's explanation for Geoffrey's mention of his source at this point (1950: 426-7) but cf. the comparable suggestions of Roberts 1991: 110.

[40] The dragon is mentioned in connection with Kay, carrying the body of Bedevere (Thorpe X.10; Wright 171), conceivably part of a story in Geoffrey's sources: the Modena archi-vault shows that Kay ("Cheu"), anyway, figured in continental (Breton-derived ?) tradition, early on, so it may not be Geoffrey who first localised him and Bedevere in France.

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favour the idea that they had continued to use a 'dragon standard', and so, also, kept alive the traditions with which it was associated.

The persistence of the dragon-standard theme in the *Historia* must make it more than possible that there was something in that surely very considerable part of Geoffrey's sources that are unknown to us, that inspired it: even if his interpretation of that tradition has inevitably been influenced by the more contemporary, mainly English, use of the dragon standard. If this is true it is hardly conceivable that the epithet we find for Uthr in extant Welsh sources was not, originally at least, somehow associated with this tradition, which identified the 'dragon' as a standard: while such an association makes the best possible sense of the 'dracones' of the *Historia Britonum*.[41] All in all it is possible to mount a fairly substantial case for some genuine traditional association between Uthr, Arthur and a dragon standard that has its ultimate roots in the use of such a standard by sub-Roman Britons.

This is important because there is a suggestion here of a direct link between the poetic tradition and the actual symbolic paraphernalia of fifth century warfare. We need to see how much more we can find in our early sources that might be a reflection of this kind of thing. One can think of the probable mention of the emblem on a shield[42] - whether originally of the Virgin or the Cross or whatever else - in the *Historia Britonum* and the *Annales*. This immediately brings the 'symbolic paraphernalia' into a religious context and so closer to the deity-become-saint-or-martyr that, we have hypothesised, lay behind the figure of Arthur. We can easily imagine how such a Christianised cult figure will have been closely identified with the military efforts of the Britons if - as was in all probability the case - they saw their war

[41] The fact that the association between the dragons and Ambrosius was strongly maintained by subsequent tradition (Lloyd-Jones: 475) might owe something to the fact that the former was linked with the historical 'national-British' cause, like the latter.

[42] It is usually assumed that the "humeros" in the *Historia* and *Annales* is by misinterpretation of Old Welsh 'scuit', 'shield', for 'scuid', 'shouders' : see, e.g., Bromwich 1975/6: 170; Jackson 1959: 6-7.

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against the Saxons in terms of 'Roman' versus 'barbarian', Christian versus pagan. The Saxons were, in Gildas's words "hated by God and man" (*De Excidio* 23). In this context it is not too hard to make the connection between the likely symbolic role of our Christianised cult-figure, in a military context, and a battle-standard. One can think of the standard of St David mentioned in Armes Prydein (Williams 1972) or the golden standards of the Celtic equivalent to Athena that the Cisalpine Gauls are recorded as carrying shortly after the Battle of Telamon (Polybius II.32). It would then be natural enough for such a 'religious' standard to become associated with other battlefield standards - like that of the dragon - in any poems or stories that were fuelled by the military symbolism of the times.

One can think, further, of the god or saint's standard sweeping into battle interpreted as representing the god or saint, himself, leading his devotees on to a glorious victory. This is what would have made him (in a really very literal way) a "dux bellorum", 'leader of battles', rather than a 'rex', 'guletic' or 'imperator'. One thinks especially of the "nine hundred and sixty men"[43] who "fell in one day, from a single charge of Arthur's and no one laid them low save he alone" which could be so easily interpreted in this kind of way. It will have been natural to declare that the victory was the work of the glorious saint or deity alone.

One thinks of the numerous examples of this kind of thing from other contexts: Homer's gods personally entering the fray at Troy, perhaps, or, in a more parallel context of religious warfare, the crusaders inspired by the miraculous appearance of saints George, Demetrius and Mercurius at Antioch or the role of St James as 'Matomaros', 'the killer of the Moors', in medieval Spain (Kendrick 1960: 13-20). This latter is perhaps the most pertinent parallel: it is easy to see how the situation of the beleaguered Britons, resisting the heathen invaders of their land will have been parallel to that of the Spanish Christians holding out against the Moors and how our hypothesised Christian cult figure might have played a parallel role to the Spanish St. James, who was "the hope and

[43] The precise number was no doubt inspired by poetic convention: Jones 1964: 11 (rather than an accurate count of the bodies !).

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mainstay of the Christian people" (of Spain) "in times of stress and threatening ruin". Furthermore, St James "was often seen fighting in battle by the side of the Christian rulers against the enemies of the faith" (O'Callaghan 1975: 105, 32) and several victories were attributed to his intervention, such as that at Clavijo in 834. As "Matomaros" this Christian cult-figure became the superhuman warrior responsible for victory: all that is lacking in this case is the process of final euheumerisation, the transformation into a mortal, historical, hero. This was obviously impossible for a figure regarded as an "apostle", but the Saint James of Compostella had similarly dubious origins to our hypothesised saint in *Ar(t)-*, almost certainly representing the assimilation of some local cult figure to the apostolic saint. Finally, in a context more closely contemporary, one can think of the bellicose Donatist Circumcellions gathering round the shrines of martyrs (Frend 1952: 171-7): one can imagine how those martyrs must have become the symbol of their struggle against oppressive enemies.

To advance this hypothesis is certainly to take something of a gamble with the sources: to rely on hints from the late outcropping of tradition about its ultimate roots; to assume, in effect, a fair degree of continuity through several centuries in what was presumably for most of that time an oral tradition.[44] Much must necessarily remain vague. We might envisage our deity-Christianised-as-saint-or-martyr who

[44] As regards the 'battle-poem', Dumville (1986: 13, note 42) notes that the error, 'scuit' for 'scuid' (my note 40) implies a written source: Koch (1997), suggests that a written, vernacular poetic, source could be as early as the mid 7th century (cf. Sims Williams 1984: 171-2). There may also have been other (Breton ?) written sources (known to Geoffrey ?) in which other elements of the tradition survived. Nevertheless the later vernacular poetic sources (in which both Arthur and Uthr appear) seem to represent a basically oral tradition, which our theory would imply changed relatively little (like the localised folk-tales, with which it often merged) over a long period of time. Moreover the 'battle poem' (whenever it was put together) might represent an ad hoc collection of famous battles (see below): in which case our theory

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played an important symbolic role in the wars of the Britons as having actually been Aaron (whether or not, in this context originally paired with Iulius) while the evolution of the actual figure of Arthur under his current name would have been the product of the subsequent evolution of oral-poetic tradition. Alternatively we might envisage a closely related cult figure, perhaps one already in 'Art-'. The important fact, however - constituting our irreducible assumption, in effect - would be that there would have been some continuity of oral-poetic tradition right back to the time of the battles associated with the British revival. One might imagine that that original poetry was quasi-religious or endowed with magical power, as, perhaps, the ancient druidical poetry had been.[45] In any case that original tradition will have changed and evolved, of course, along with the name and nature of our symbolic-religious-figurehead-become-euheumerised-hero: but it will have retained traces of its original close association with the military symbolism of the time. That, above all, will have given Arthur his consistent historical context and the likeness of a genuine historical figure: capable of exploitation by the pseudo-historians of a later age. It meant he became something other than just a timeless figure of folklore, although in certain contexts that was still the way he appeared. Our assumption, then, has the potential to explain the "historical" aspects of the legend and reconcile them with its ultimately "mythological" origin: and that is the justification for our 'gamble' – for trusting the hints in those late 'traditional' sources, and our interpretation of them.

We might envisage some kind of interaction between the battle-poetry and popular folklore-type tales associated with the toponymy: and it just

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would imply that it is the allusions in the poem to an older (oral-poetic ?) tradition that are more significant than the list as such.

[45] The fact that in some sources (*Ymddiddan a'r Eryr* verse 1; Triad no. 12, Bromwich 21-22) Arthur appears as a "bard" could be related to the original attribution of the poetry, or the 'poetic inspiration' behind it, to our deity (-become-saint). This line of thinking might lead us to question the historicity of the cynfeirdd: 'mythological' tales of the type that attached to Arthur also attached to Aneirin (Koch 1997: 96-99; Triads 33, 34: Bromwich: 70-4, 271-3).

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might be that the evolution from a figure in 'Ar-' (as in 'Aaron') to one in 'Art-' was associated with this. At least one figure associated with the earliest strata of Arthurian' tradition, 'Cai', seems to have close associations with the toponymy (Bromwich 1978: 306; Rhys 1901: 565-6). The early stages of the evolution of the oral-poetic tradition will, anyway, have been the context where the dragon standard, the adjective 'terrible' (as applied to that, or 'arth(ur)', or both ?), and the word *arth* as an appropriate designation for a fierce warrior, will all have played their part. It will certainly have provided an appropriate context for the re-interpretation of *art-*, 'stone' (or a name derived from this), in terms of *art-* (< *arth*) 'bear' while it will also have provided the context for the next stage whereby the specific form 'Arthur' will have evolved somehow or other: conceivably from *arth gwyr* (*art-uur*), encouraged by the alliterative compatibility of this particular form with 'Uthr'. Or maybe, for instance, from 'Arth uthyr', 'terrible bear/warrior', compressed in an alliterative poetic context to 'Arth-ur' .

Of course the idea that the '-ur' in 'Arthur' represents (an original) 'Uthyr' is precisely what the Sawley Gloss (Dumville 1977; 1972-4) - "Artur latine translatum sonat ursum horribilem.." - would seem to imply. One suspects that this inventive twelfth century etymologising ('Arthur' is also etymologised in terms of "ordd", 'hammer'), is based on the alliterative poetic word-play of sources (oral or written) known to the author (for whose likely knowledge of Welsh tradition, Dumville 1977a: 46-8). It is not impossible that the 'ursum horribilem' etymology was inspired by a poetic phrase ('arth uthyr', 'arth aruthur', or the like) used, with alliterative effect, of 'Arthur' (cf. my note 34), that had actually been preserved by bardic, or popular, convention, from very ancient times. Meanwhile we can find tolerably close parallels to the kind of thing suggested here in the poetic diction of the Gododdin: "arth-ci", 'bear-hound' (compare 'arth-gwr') as the name for a warrior, or "arth arwynaul" 'terrible bear', as a description for one (Koch 1997: 24-5, 66-7); though these are not applied to a figure who must, all along, have been endowed with a very special significance.

Of course it is very possible that assimilation to the Latin-derived name will have played a part, in this context, as well. The second

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century Lucius Artorius Castus[46] is a reminder that people with this name will very likely have been present in Britain, while it might be possible to argue that there will have been more names of Roman origin in general (and more commonly used) in the immediately post-Roman centuries than have come down to us in Brittonic tradition. It just might be, too, that it was felt desirable, by some, to 'Romanise' and so de-mythologise this hero of the national British cause, and so, all the more effectively, sever any links he still had with native pre-Chrisian beliefs. Finally, though, it would be only sensible to acknowledge that there might also be some factor involved in the genesis of the final form 'Arthur' that has escaped us completely.[47]

The reason why one particular cult-figure achieved a special dominance in the first place - if this dominance was not, in part, somehow a development associated with the early poetic evolution,

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[46] Kemp Malone 1924/5. Despite the tempting parallel between this soldier's Armorican expedition and Arthur's legendary exploits in Gaul it is hard to see how or why any special memory of him would have been preserved. In this context, however, one cannot entirely rule out some other historical Artorius/i who made the name well known, and in that sense contributed to the legend.

[47] One might expect something parallel to the mutation, divergent development and consequent multiplication (Arthur, Uthr, ?Gwythur) of names, hypothesised here, in the cult context from which we have proposed the figure of Arthur originates. This is too complex a field to fully investigate here (see in general the work of Padraig O'Riain) but note my suggestion (Thornhill 1999: 489, note 32) that the *Liber Landevensis* record of a cult of Aaron and Julius represents a rather artificial revival, while the natural successors to the cult might show more signs of a mutated and fragmented tradition. For possible parallels in a cult context (but not necessarily uninfluenced by secular tradition) of our hypothesised development 'Ar-' > 'Arth-' cf. saints Arth(g)en of an extinct Llanarthen in Gwent and Arthmael, a Breton saint said to have come from S.E. Wales whose closest association was with one `Caroncinalis (cf. Caran-toc, Car-utius etc.) and whose dragon-slaying legend was localised at a rocky precipice on the "Mont S. Armel", by the river Seiche: Baring Gould & Fisher, *Lives of the British Saints*, I, 169-73); A. Le Grand, *Les Vies des Saints de la Bretagne Armorique*, 1901.

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perhaps by association of the cult figure with the historically outstanding figure, Ambrosius - is something else that must remain obscure. Our only real clue is the evident dominance of the cult of Aaron and Iulius, which may have superseded, in certain contexts, the certainly earlier dominant cult, of St Alban.[48] We may be dealing with a reflection of the dominance of a certain regional grouping (perhaps the Silures: see Thornhill: 489-90) with their own regionally important cult-figure. In more general terms, as we have seen, the dominance of a syncretic cult-figure will have reflected the urgent need for a unifying focus in a society that was nominally Christian (no doubt often genuinely and earnestly Christian but only for the most part at the higher levels) but remained overwhelmingly 'pagan' at the grass-roots. There will have been a need to motivate (at least some of) those pagan, or still pagan-minded, masses, in the interests of national survival in the face of the Saxon (and Irish and Pictish) threat. A synthesis will have been forged under pressure and we must assume it worked for a while although, to the despair of Gildas, things soon started to fall apart.

It will have been during this period of great social (and linguistic) change that - judging from Gildas (*De Excidio* II.34,6; Sims-Williams 1984: 174-6) - vernacular oral culture emerged from sub-culture status to something more widely accepted at the higher levels of society: no doubt as a more Latin-based, perhaps self-consciously revivalist 'Roman' culture (cf. Sims-Williams 1984: 171-2; Jackson 1953: 149-73), associated with Ambrosius, declined or retreated into the church. The euheumerised hero of the poetry would have evolved in the context of the dissolution of the social order in which his antecedent cult-figure had played such an important military-symbolic and unifying role. The

[48] I believe that Alban had derivatives in Brittonic legend, parallel to some extent, to Arthur as a derivative of Aaron (or a related cult-figure in Ar-) and that a substantial number of the figures of Brittonic legend represent the 'euheumerisation' of syncretic cult-figures, often under the influence of their one-time symbolic military role: therefore that Arthur, is, to some extent, the most prominent example of a wider phenomenon. That takes us beyond the scope of this paper but (like the note above) indicates some potential for corroborating the hypothesis advanced in it.

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original cult figure will have lost much of his relevance in the new circumstances and this will have been the context in which a derivative 'hero' was able to evolve. It may also have been the context in which poems (now devoid of any magico-religious significance they might once have possessed) and stories originally associated with a sub-class, and permeated with popular folk (from cult -) belief will have achieved a higher standing and more general acceptance while any more sober record of history tended to disappear along with the Latinate, Romanised, upper class, who might have preserved it

. It would be this period of exceptional social and linguistic change that also saw the greatest changes in tradition: in this context it would have been a period of exceptional fluidity by comparisom with the relative stagnation that followed. The most important developments in our oral tradition, then - including the genesis of the name of our hero in its final form, 'Arthur' - would have been concentrated in this early period, probably not extending beyond about the mid sixth century.[49] At any rate we would regard the figure of 'Arthur' as well established by the late sixth century when there begin to appear the often-noted examples of the use of 'Arthur' as a personal name,[50] as well as, very likely, the reference to Arthur in the poetic tradition of the Gododdin tribe in the North East (Koch 1997: 22-3, 147-8). It has been wisely remarked (Padel: 13-14) that this reference to Arthur as a paragon of military valour rather reinforces his 'superhuman' dimension and does not necessarily imply a belief in his historical existence, at that time. One would need to allow, of course, for a degree of ambiguity between historical fact and poetic fiction, hardly imaginable today, as well as for a different understanding of the same figure by different people or different elements of society (contra Koch: 148).

Something else which this reference has been taken to imply is that Arthur was a figure of Northern Britain (Bromwich 1978: 278; 1975/6)

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[49] Cf. Dumville 1986: 9-11: " the middle of the sixth century forms the major watershed of our post-Roman history...."

[50] E.g. Chadwicks: 161; Bromwich 1975/6: 178; and Padel: 24 for an interesting and plausible suggestion for why most of these are Irish.

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and this has been supported by analogy with the large number of other heroic figures of Welsh tradition who were from the Old British North. But as we have seen these belonged to a different, more closely defined, kind of tradition (as well as a rather later historical period). Added to that there is a likely reference to Arthur in a poetic source from the Welsh borderlands (in which Arthur likewise figures as a kind of standard of comparisom for military valour) that may be almost as early (*Marwnad Cynddylan*, ed Williams 1931-3: 136, 140; trans. Clancy: 87-9; Bromwich etc.1991: 5, 13 with note 10). More important still, early Welsh tradition is actually quite consistent in locating Arthur in Cornwall.[51] 'Cernyw' (synonymous with 'Dumnonia' as anciently appropriate to a region covering most of the South West) represented to the Welsh that once-Celtic 'Lowland Britain' of which it was the last remnant. This area - effectively 'Southern Britain outside Wales'- was, in all probability, the scene of Ambrosius's main activities, including the battle of Mount Badon (so Jackson 1953:11).

Geoffrey, of course, re-located Arthur at Caerleon. His choice may have been determined by its closeness to his Monmouth and the presence there of spectacular Roman ruins (though so, also, perhaps, Caerwent). But we cannot ignore the fact that this was also the site of the martyrdom of Aaron and Iulius, according to Gildas, given that on our theory the tradition associated with the former will have borne some kind of relationship to the one surrounding Arthur. Geoffrey certainly does give the martyrs' cult some emphasis in his description of Caerleon, which, he says, was famous for their two churches (Thorpe: IX, 12; Wright: 156): something hardly true, in his own time.

On a more general level, the advantage of our interpretation is that it allows us to understand why Arthur appears so closely parallel to the "real" great leader of the time, Ambrosius. One can see why Arthur

[51] E.g. *Ymddiddan a'r Eryr* stanza 34 (Haycock: 306) "chief of the battalions of Cornwall". For 'Celliwic' in Cornwall as Arthur's court see *Culhwch ac Olwen* (Jones G&T: 87, 89, 106-7, 112; Bromwich 1992: 91-2); Bromwich 1978: 3-4.

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might have been equally closely identified with the same historical context and how he could appear as uniquely the dominant figure, as Ambrosius had seemed to Gildas. One can even understand the presence of both - in a sense - at Badon. It is also worth returning, in this context to William of Malmsbury. It is interesting how closely he associates Arthur with Ambrosius, seeing the two as contemporaries :
"...had not Ambrosius, the sole survivor of the Romans ....quelled the barbarians by the powerful aid of warlike Arthur".
He seems to think that Arthur was Ambrosius's great general but the way in which it is Arthur who seems to represent the military dimension, as it were, of Ambrosius, also has a certain compatibility with our hypothesis. It is not entirely obvious how William would have got this idea from Nennius and Gildas alone (though he may perhaps have made his own deductions on the basis of these) and one wonders if he had another source, perhaps related to the traditional poetry and the 'fables' of the Britons (= Bretons, according to Loomis 1959b: 53-4) that he mentions.

At the same time our theory allows us to understand why 'Arthur' might have been identified with all the military endeavours of the Britons of that time, whether actually, directly, associated with Ambrosius, or not. This could account for the very broad geographical range of the battles listed in *Historia Britonum* 56 (Jackson 1945/6), but as has been well noted (Chadwicks: 162; Jackson 1959: 8; Padel: 18-19) this might represent the association of famous battles with the famous hero at a later date. It might also have some relevance, however, to the to the tradition which places Arthur's most spectacular campaigns on the continent. This surfaces most spectacularly in Geoffrey of Monmouth (Thorpe IX.11-X.12; Wright), but as we have noted above, very likely existed much earlier amongst the Bretons (Le Duc; Fleuriot 1980 etc..). There is an obvious historical basis for this legend: the known activities of British warriors in Gaul, during the fifth century, most notably (or most well recorded) those of the British war-leader, Riothamus, who was active around 470 in the Loire valley (Sidonius *Ep.* III.9; Jordanes' *Getica* 45; cf. Gregory of Tours, *History of the Franks*, II, 18-19). This is the approximate period in which we would

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place the activities of Ambrosius and in which our cult-figure would have played a leading, symbolic-military role for the Britons. It is not difficult to see how the campaigns of Riothamus, or other Britons on the continent in roughly the same period, might have been associated with (and ultimately attributed to) Arthur on the same basis that Ambrosius's had been.[52] At any rate the tradition emanating from these continental events will tend to have been rooted in the same military-religious symbolism as the insular ones, and it will have been easy for Arthur, belonging to that common context, to have been translated from the traditions of one area to those of the other, at some stage in their evolution. At the same time there might well have been some conflation of the tradition surrounding Riothamus and his contemporaries with that attached to the activities of earlier Britons, involved in the continental incursions of Maximus and/or Constantine III, as has also been suggested (Fleuriot 1980: 176; Dumville 1977b: 181).

Fleuriot (1980: 170-6; but cf. Dumville 1977c 19-20) drew attention to some scraps of tradition that suggest that Ambrosius, himself, was active on the continent. In our current state of knowledge we can hardly rule that out, but it may be more likely that this is a by-product of a close identification of, and confusion between, Ambrosius with Arthur. In the light of our hypothesis a close association, or even identification, of the two - at least in certain contexts - might be something we would expect. There would seem to be other examples of the merger of 'historical' with divine figures, resulting effectively in the acquisition of a 'divine' or 'mythological' name by the former : 'Hengist' (understood as a corruption of 'Ansehis') and 'Merovech' might be examples from roughly our period (Moisl 1981: especially 221-2, 226).

The earliest recorded (human) figure associated with Arthur is the 'Amr' who is said to be his son in the Mirabilia of the Historia Britonum .[53] This name represents an earlier 'Ambr-' and it is natural to

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[52] Ashe (1981) argues, ultimately, that Riothamus actually WAS Arthur.

[53] The tradition attached to this figure was strong enough to emerge into the Romances (*Geraint and Enid* : Jones, G&T:190) in the form of 'Amhar', son of Arthur: while 'Amhren', son of Bedivere (mentioned, significantly, with

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wonder whether it is a coincidence that it seems to be a name so distinctly reminiscent of Ambrosius. At first glance one would tend to assume so because the name is evidently derived from a river name 'Ambr-' that has given modern English Gamber, as well as Welsh 'Amr' (Ekwal 1928: 12). However, it is clear from the *Historia* that Ambrosius was rapidly mythologised: this may be a process that had already started by the time of Gildas since it is possible that his reference to Ambrosius's parents as having 'worn the purple' (*De Excidio* 25) reflects the legends already growing up around him rather than actual fact (though of course it may reflect the latter). An Ambrosius who, at a popular level, became 'mythologised' very rapidly, might have become identified, in a localised context, with a river-related cult name in *Ambr-*, that still sounded, at that stage, very much like his own name (Ambr-osius gave later Welsh 'Emreis', because of the extra syllable and the effect of i-assimilation).[54] 'Amr' would then represent (the euheumerisation of) a merger of river-spirit with outstanding-historical-personage-become-deity. The latter element would be what lay behind the association with Arthur: expressed in terms of a filial relationship that has in turn attracted a mythological-type tale. Our hypothesis about Arthur would suggest that, in the minds of people at a certain level of society at least, there could be this kind of interrelationship, and interaction, between the worlds of localised nature-spirits or deities and of historical events and people, so that if Arthur could pass from the former to the latter so could Ambrosius, in a sense, pass from the latter to the former. At any rate such an

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him; also in *Culhwch ac Olwen*) and 'Amhren Hir' (Arthur's servant in *CO*) may well be related (divergent derivative ?) figures.

[54] Fleuriot (1974; 1980: 172) identified the 'A(m)bros' in the genealogy of St Gurthiern in the *Cartulary of Landvennec* as Ambrosius, and if this is not the result of poor copying from a Latin source (at some stage) then the name 'Ambros' was used for Ambrosius in Brittany. Since his name should have been subject to i-assimilation in Breton as in Welsh (giving Embreis > Emrys) this variant form would have to represent assimilation of Ambrosius/Embreis to a similar name without the 'i' in the ending: such as our river (and cult/divine ?) name in *Ambr-*, whence 'Amr'.

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explanation allows us to attribute the fact that the first figure recorded as associated with Arthur has a name that sounds very like 'Ambrosius', to something other than pure coincidence.

One of the last places that one would associate with the actual scene of Ambrosius's operations is North Wales but the legend reported about him and Vortigern that is reported in the *Historia Britonum* is localised there. In fact it is clear, even from the *Historia* that Ambrosius had other, perhaps deeper, associations with South East Wales (specifically "Gleguissing": *Historia Britonum* 41), as one might expect given its closer contacts with the more Romanised areas of Lowland Britain with which one would naturally associate Ambrosius and his military activities. The fact that we are treated to a version of the legend localised in Snowdonia no doubt has something to do with the fact that the *Historia* was compiled in Gwynedd. Nevertheless the hill fort that features in the legend - no doubt on the basis of its actual (archaeologically confirmed: Edwards/Lane: 55-7)) significance during the sub-Roman period - is actually named after Ambrosius: 'Dinas Emrys'.[55] Furthermore the name of Ambrosius was actually used, in a poetic context, as a periphrasis for Snowdonia or Gwynedd (Lloyd-Jones 475; Sims-Williams 1991: 43-4). That is a rather curious fact and one that is hard to explain purely on the basis of the localisation of a legend about him (and, equally, Vortigern) in the area. The earlier name for 'Dinas Emrys', so we read in the Mabinogion tale of *Llud a Llefelys* (line 136 in Roberts 1975: 5, 14; Jones G&T: 78) was 'Dinas Ffaraon Dandde'. "He was one of Three Noble Youths who broke their hearts with consternation", we are further told. This was evidently another figure of legend and folk tale but if his origin was ultimately a local one associated with the hill-fort then it will not have originally included the exotic 'Ffaraon', 'Pharaoh'. It might be, though, that that part of the

[55] For a suggestion that the connection between the two was based on more than just the story in Nennius, Bromwich 1978: 346 (quoting Rhys Goch Eryri).

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name is a literary elaboration[56] of a similar sounding one that did have local associations. One is tempted to think of our Christianised cult-figure 'Aaron' and the oronym-associated divine-name in *Ar-(an)* that stands behind it (or perhaps a close relative: my notes 7, 58), not least because the hill that stands behind Dinas Emrys is still called 'Yr Aran'. If one envisages the relevant divinity as ultimately a solar one then that might make some sense of the other part of the name 'Dandde' (for 'Tan-dde'), 'fiery'.[57]

It would then be the perceived association between Ambrosius and Arthur - and therefore, also, related toponym-associated figures in 'Ar-' - that would lie behind the association of Ambrosius with this place (as well as its sub-Roman associations).[58] But there must be more because this does not really adequately explain the use of Ambrosius's name for the whole of Snowdonia.

The mountains called 'Aran' or 'Arenig' (Thornhill 1999: 486, note 28) are within Snowdonia (as currently defined) but are not part of the central massif around Mount Snowdon, below which Dinas Emrys lies and which will always have been regarded as the most important and characteristic part of the region known as 'Eryri' in Welsh. Sir Ifor Williams (1927-9:137-41, 1929-31: 137; 1945: 18) illuminated the

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[56] Inspired by the Exodus story that connects a Pharaoh with serpents ('vermes, dragons') or the figurative use of 'Pharaoh' for a powerful/ prestigious figure ?? See Roberts xxxvi-xxxvii.

[57] Bromwich 1978: 24, 427; Roberts: 5, 14(note), xxxvi-xxxvii. Intriguingly, Pharaon seems to appear in the tantalisingly obscure (7th century but corrupt ?) *Gorchan Maeldderw* (Lofmark: 47; Jackson 1969: 157-8; Williams 1931) associated with a red dragon: reminiscent, obviously, of the red British dragon of *Historia Britonum* 42, and giving Pharaon (< Aaron/*Ar-on-*) a parallel dragon-association to both Ambrosius (my note 41) and Uthr/Arthur.

[58] Rhys (1901) gives further legends about Dinas Emrys. It may be that the legend about hidden gold (*aur*) and the associated epithet for Emrys, 'Ben-aur' (p.470), arise ultimately out of the corruption/re-interpretation of a name in *ar-* (cf. Thornhill 1999: 497) while 'Urnach'/'Wrnach'/'Awarnach' (Bromwich 1992: 137-8) might ultimately represent a goidelicised version (in '-ach') of our theo-toponym *ar(o)n*, or a close relative in *ŵar-* (for which note 7, above).

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etymology of this name as from the root **er/*or* as found in Latin *orior*, 'to rise' and Greek ορος 'mountain', though more closely related to a an old word *eryr* that meant a 'river bank' or 'sea shore', and *eryr(i)* as a local term for the weals that rise on the skin in shingles, than to *eryr* meaning eagle, which shares the same root. In line with the approach outlined in my earlier paper (Thornhill 1999) we might speculate whether there might be an earlier name from the substrate that had some influence on the adoption of this particular one for Snowdonia. One might be thinking of an earlier name as such, or a word for mountain, from the substrate, that became applied to this mountain in particular in the way that the English 'Mendips' derive their name from Celtic *mynydd*. Ifor Williams derives *eryr*, 'bank', from *ar-or-i-*, where *ar-* is the prefix 'in front of, up against' and the 'i' was a plural termination that caused the change of the 'a and 'o' to 'e', by i-assimilation. In the case of Eryri for Snowdonia the 'i', comes from a place-name termination, of which there are other examples.

Had there been an ancient name in *Ar-*, then THAT, either with the prefix *ar-* or as a doubled-up form *Ar-ar-* , would, with the same place-name termination, have given 'Eryri' in just the same way as *ar-or-i*, and might have been understood as containing the same root. At any rate there might, at some stage, have been a re-interpretation of an ancient toponym *Ar-*, in terms of the appropriate Indo-European root *or-* : quite possibly a type of assimilation that was a typical feature of the substitution of Indo-European, for earlier, names and not limited to just this one example. The idea that a doubled-up form of our pre-Indo-European root *ar-* was involved is attractive because this kind of doubling up has been thought of as typical of the substrate languages and was typically applied to major toponymic features: hence the 'Arar', for the Saone, but in all probability originally for the river Rhone itself (rather than just its tributary) as the major river of the area (Thornhill 1999: 473). A name 'Ar-ar-' might, then, have been appropriate in an oronymic context to Snowdon (and therefore Snowdonia) as the largest mountain in the region. It is worth noting, anyway, that Geoffrey of Monmouth, although he uses the form 'Mons Erir', also uses 'Mons Arauius' for Snowdon. This might represent

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some written or oral corruption of 'Erir(ius)' that was unrecognisable as such to Geoffrey, but it might also be possible that it represents a genuine variant, perhaps the survival of an ancient form.[59] The fact that it takes a form 'Ara-' makes it correspond very closely to our hypothesised original name (only 'Ararius might have been better still) and that might not be a coincidence. In any case the name, 'Yr Aran', that still applies to a subsidiary peak of Snowdon would, on this basis, represent a remaining trace of a name that had applied to the whole mountain massif.

The idea, of course, is that this theory would allow us to explain the especial connection of Ambrosius with Snowdonia as a whole, as with Dinas Emrys in particular, as resulting from his association with Arthur and thereby related toponyms in *Ar-*, of which the ancient name for Snowdonia will have been one of the most important. In this context one can quote the legends that associate Arthur with Mount Snowdon. These are recorded late but Padel has demonstrated that these kinds of legend can go back a long way. Arthur and his men set out from Dinas Emrys (significant if this was once Dinas Pharaon < *Ar-on-*) into a battle on the mountain, where he is killed by an arrow on Bwlch Y Saethiau, the Pass of Arrows: there he lies buried under a cairn named after him while his warriors lie sleeping in a cave, nearby (Rhys 1901: 473-6). It is true, though, that the presiding spirit of the place with his tomb ('Wyddfa') on the summit is not Arthur but rather the giant, 'Rhitta Gawr'.[60] This giant, however, is clearly associated with Arthur in the folk tale that underlies Geoffrey's story about Arthur's slaying of the giant 'Ritho'

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[59] Wright: 113 (12); (=Thorpe VII.3) "montem Arauium". Geoffrey also uses this name in his 'Prophecies of Merlin' ("in Arauio monte": Wright: 165; Thorpe X.3) Tatlock (1950: 417) sees this as evidence of Geoffrey's additions to traditional material, but the fact that it is associated with an 'eagle' (*erir* in Welsh, reminiscent of 'Eryri') and that the next prophecy is about Gwynedd might suggest this comes from Welsh sources in which its location was known: an ancient name, evocative and mysterious, might have been appropriate in a context of prophecy.

[60] Rhys 1901: 474-9, 560-4. Ritta may appear in *Culhwch ac Olwen* as 'Ricca', the father of 'Gormant' : Rhys 478, note 1; Bromwich 1992: 82.

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and, interestingly, it is precisely in that context that Geoffrey uses the form 'montem Arauium'. Although Rhitta Gawr is primarily associated with Snowdon he is secondarily associated, in local legend, with the Arans.[61] This is interesting because it might suggest some special relationship between 'Rhitta' and our ancient toponym *Ar-*. This, in turn, could be explicable on the basis that 'Rhitta' derives from *(A)r-it-*, where the *–it-* represents the earlier form of the suffix *-id* that featured in the mountain/hill names 'Elenid and 'Claerwenit'.[62] This hypothesis could explain his association with both the Arans and Arthur as well as being compatible with our theory about a substrate name in *Ar-* that lies behind 'Eryri'. Finally, if the *ar-* root was appropriate to Snowdon, the highest point of Wales (and the Roman province of Britain) then we also have another reason for the prestige that the cult name(s) in *Ar-* might have had in the sub-Roman and earlier eras.

These hints of a link between Ambrosius, Arthur, and toponyms in *Ar-* are obviously important for the support they offer our central hypothesis. However this has to be seen primarily in terms of how it offers an explanation for the nature of the legend as it has come down to us: above all for its dual aspect - the specific historical context matched with the widespread toponymical/mythological legends - that is apparent already in our earliest source, and that has been noted as a fundamental feature by perceptive commentators from Rhys to Padel. The legend is an important historical fact in need of an explanation and that explanation may tell us more about sub-Roman history than simply whether a man called Arthur fought at Badon, although it might bring us quite close to a final answer to that question, too.

But if our hypothesis suggests that Arthur, as such, had no historical existence, it does, nevertheless, imply that his legend had its roots in the historical achievements of, above all, one man: namely Ambrosius

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[61] Peniarth MS 118 (folios 829-37 at 830, ll. 6-35) in *Y Cymmrodor* 27, 1917, pp. 126-9.

[62] R.J.Thomas 1938: 65-6. Conceivably with assimilation to the root of 'rhidio', 'a corry' (Pokorny: 330) ?

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Aurelianus. We can exercise our imaginations to the full over what may have been the authentic adventures and achievements of his lifetime (cf. Sims-Williams 1983a: 28-9; Morris 1977: 96-7). No doubt the fact was stranger than the fiction.

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The Anthropomorphic Stelae of the Ukraine:
The Early Iconography of the Indo-Europeans

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A Further Study of the Cognitive Significance of the Number Four in Eurasia[1]

Penglin Wang
The Chinese University of Hong Kong

This paper explores the cognitive possibility that early people, in the course of cultural exchange in Eurasia, may have sequentially equated the numbers for counting with the time series used in the archaic Chinese calendar and in the zodiac calendar with twelve symbolic animals. In the case of the number four, as a result of this cognitive tendency, the Anatolian numerals for four (Hittite *mieu-*, *miu*, Luwian *mauwa-*) had a connection with Chinese *mau*^{3} (Old Sinitic **mau* / **meu*) 'the fourth of the twelve earthly branches'. This argument is also based on the observation that Chinese *mau*^{2} 'anchor (with four flukes)' may have resulted from a quadripartite perception. The semantic correlation drawn from this observation is then used to address the cognitive process underlying the nomenclature of four-sided cropfield and four-footed beasts in Eurasia.

Key Words: Cognitive anthropology, linguistic anthropology, Chinese, Indo-European, Altaic, Central Asia.

1. Introduction

Transcontinental communication had long been a factor in promoting the linguistic and cultural advancements in Eurasia since remote antiquity. Although this communication was carried on at a considerably slow and gradual speed compared with that of modern times, it was indeed a factor that was of dynamic and far-reaching importance; no one and nowhere had escaped. Linguistically, this communication had been embodied by a process of vocabulary diffusion – quite often, diffusion of most basic words into the various Eurasian languages. It is not surprising, therefore, that linguistic interaction in Eurasia should become traceable through a cross-linguistic comparison and eventually visible in their basic vocabulary past and present. In the case of such basic words as

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numerals we have the number four as one of the successfully diffused numerals throughout Eurasia. There was, first of all, a strong cognitive tendency toward equating the numeral four with a four-sided square figure cross-linguistically. If it became necessary, for practical reason, to name such square figures as cropfield and village, the numerals for four came to be an ideal designation. As a result of this cognitive tendency it proved productive for researchers to gather a number of words from areally connected languages, which may fall among the category of geometric abstraction of quadrilateral figures, and to scrutinize them to see how they can be etymologically interpreted in arithmetic and geometric terms.

In my previous research I discussed how people geometrically perceived and named village and cropfield by using the words for 'four, square' (Wang 1998). As I have endeavored to collect a new batch of materials after I finished the paper, the theme deserves further pursuit and elaboration because it sheds light on the significance of cognitive process underlying the interrelationship between the words for 'four, square' and those for 'village, cropfield'. An attempt will be made in the following pages to bring forward substantial evidence of the cognitive significance of the number four. I will argue that the Anatolian numerals for 'four' (Luwian *mauwa-*, Hittite *mieu-*, *miu*) had an etymological connection with Chinese *mau*^{3} 'the fourth of the twelve earthly branches (for time-reckoning)', *mau*^{2} 'anchor (having four flukes)', and *mu*^{3} (Cantonese *mau*^{5}) 'quadrilateral cropfield sized one hundred square steps (in ancient China); a traditional measure unit of land area (= 0.165 acre)'[2]. This ostensive similarity in both form and meaning was by no means due to chance. Instead, it was resulted from the cultural ties which had existed between the Hittites in Anatolia and the Chinese in the Yellow River valley in ancient times. In this sense, we should realize that to deeply understand the nature of numerals, we need to examine not only a single language or a single stock, but also the areally connected languages across different stocks on the one hand, not only the numerals for counting, but also the phonetically similar words which possibly bear arithmetic or geometric significance implying original numeration on the other. I will organize my discussions under four headings: (a) the importance

[2] The superscript figures attached to certain Sino-Tibetan words stand for tone marks.

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of the time series used in the archaic Chinese calendar of ten heavenly stems and twelve earthly branches and the zodiac calendar with twelve symbolic animals in the formation of transcontinental numerical connections, as Chinese *mau*^{3} 'the fourth of the earthly branches' and Tujia (a Sino-Tibetan language) *maut*^{h}*auli* ~ *maut*^{h}*oli* 'rabbit (as the fourth series in the zodiac calendar)' correspond to Luwian *mauwa-* 'four'; (b) Luwian *mauwa-* 'four' and Chinese *mau*^{2} 'anchor (with four flukes)'; (c) Luwian *mauwa-* 'four' and Cantonese *mau*^{5} 'a traditional measure unit of land area'; (d) the number 'four' and the nomenclature of four-footed animals. For the purpose of this paper, these words are the core of the linguistic evidence I will provide in advocating for the linguistic interaction between Anatolian and Chinese in history.

My major findings in this paper are that the Chinese time-reckoning system – the system of heavenly stems and earthly branches developed already during the Shang period of China (c.1600–c.1100 BC) as time series for day-counts – as well as the animal time-indication method used by some Asian peoples are very important in understanding the origin of numerals and their diffusion in the Eurasian continent. The Anatolian numerals for 'four' were by no means isolated forms in relation to arithmetic and geometric expressions. In fact, the forms of *mV-* in related meanings were widely distributed in Sino-Tibetan, Altaic, and Indo-European.

2. The Importance of the Chinese Calendar of Heavenly Stems and Earthly Branches

The historical distribution of the Indo-European-speaking people such as the Tokharians in the northwestern part of China, with the Yellow River to the east, which constituted the very root of the Chinese civilization, and with the adjacent Altaic peoples to the north and the northwest, immediately suggests a contact between these peoples with different cultural and linguistic backgrounds, opening up ever profound horizon for linguistic enrichment and cultural advancements. Every one of the languages involved in the contact may have yielded linguistic strata concerning numerical aspect of lexicon, which allow us to interpret the cultural ties, cognitive mechanism stretching here and there, native processual development and mutual influence giving rise to new linguistic expressions. The (pre)history of China, notwithstanding all her early brilliant civilization, was involved in the same trend.

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The distance between Anatolia and the Yellow River valley in central China was not an unsubmissible barrier in prehistory. If we randomly estimate mutual cultural exchange at a speed of 15 kilometers per year, it would take about 1,000 years to cover the whole region. Then, throughout (pre)history, the continent had been a large stage reconstructed from the bottom. Cultural communication was made possible through a circulation of basic vocabulary among various languages. This point is important not only to our understanding of how a numeral came to be shared by many languages either genetically related or unrelated but also to our understanding of the semantic changes brought about by the circulation. It is not enough to say that there was contact between the various languages in the region; it must also be further said that the similarity in vocabulary was realized by most basic words. Thus, the effects of the similarity are nowhere more apparent than in basic vocabulary. At this point, I have difficulty in understanding the following viewpoint expressed by Lubotsky (1998:382): 'when an Indo-European etymology can easily be found for practically every Old Chinese word, we must first refrain from comparing words from the basic vocabulary'. In my view, this assertion draws attention to the danger of images of the basic vocabulary leading to habitual stance away from it. Meanwhile, I fully agree with Lubotsky's worry about 'various methodological dangers' (380) and his warning against 'rather loose phonetic and semantic correspondences' (381), which might lead to an Indo-European parallel for practically every Chinese word due to the characteristic monosyllabicity of Old Chinese words. However, typological considerations cannot be the reason for refraining from comparing words from the basic vocabulary in Indo-European and Sino-Tibetan. Any loose phonetic and semantic correspondence may occur in comparing either basic or non-basic vocabulary. If we carry out this 'non-basic' approach throughout, there will simply be no talk on substantial comparison. Of course, we need to deal cautiously with words from basic vocabulary and avoid excessive reconstruction. This depends on individual scholar's judgment of what basic words and what good correspondences are.

The Chinese and the Hittites lived in a world of cultural exchange not in an isolated enclave. The sense that it is time for an emphasis transfer in the ways in which we think about the role of basic words in transcontinental vocabulary diffusion has become

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more and more urgent in the recent years as archaeological findings are getting increasingly supportive for the intimate contact between Chinese, Altaic and Indo-European in Inner Asia. In this connection, we have much material providing ample scope for cross-linguistic comparison. I have been working toward the goal of making this comparison understandable and even acceptable to scholarly circle.

For the purpose of this paper I shall point out that every society may use number words or series words in many ways, including some of the following: (a) for time-reckoning; (b) for counting; (c) for superstition; (d) for numerology and fortune-telling; (e) for symbolic representation. This may not be the definite list, but it covers the ground. All these uses are well represented in Chinese, Altaic, and Indo-European. In the case of Chinese, during the Shang period people created a large number of written pieces, part of which has been well deciphered. Although the characters used in the oracular texts are not of phonetic nature, their present-day pronunciations in the various Chinese dialects and their counterparts in the other Sino-Tibetan languages are of course a historical continuation of their antecedents in remote history. During this period the Chinese *ganzhi* (*gan* 'stem' and *zhi* 'branch') calendar played a vital part in day-counts with its time series as the Shang court diviners needed to know what day it was when they started to divine. Most of the excavated oracular tortoiseshell inscriptions bear the ganzhi time series including both heavenly stems and earthly branches forming a sexigesimal cycle. Curiously enough, a couple of kings during the Xia dynasty (c. 2100-c. 1600 BC, which preceded the Shang) were given names consisting of time series from the heavenly stems as a componential part. Moreover, the names of most of the recorded Shang kings contain the words for time series from the ten heavenly stems. This method of naming is reminiscent of the following statement by Schmandt-Besserat (1992:171), who investigated counting clay tokens as funerary offerings in Mesopotamia: 'The rarity of funerary tokens and their association with luxurious burial deposits, artifacts symbolizing power, and special architecture indicate that the counters did not belong to the masses but were the privilege of an elite'. It was claimed in ancient India that the number is 'Brahma-natured', meaning that it is similar to the Divine. Indeed, in certain texts of ancient India numbers are worshipped: 'Hail to the One, hail to the 2..., hail to the 100...' (see Schimmel 1993:10). I have no information on whether ordinary

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people during the Shang period of China had their names with time series from the heavenly stems since they had less or no opportunity to be recorded in written texts. If only the kings and royal members had this privilege, the Chinese time series would have symbolized power like the Mesopotamian clay counters. The names 'heaven' and 'earth' endow the time series with sacred power. It is important to note that these time series existed together along with Chinese numerals (which are still used today) in the same oracular texts for the numbering purpose and that months were ordered by numerals. These historical facts are too well known to need elaboration, but too important to disregard in numerical studies. The inception of time series in ancient times and their continuance up to the modern period meant a powerful influence on the ways in which people may have held a separate approach to time-reckoning and counting, with the former possibly preceding the latter.

As time series and counting numbers were used side by side in many cultures, we may ask whether they each came into being through different channels resulted from cultural and linguistic contact. To the best of my knowledge, there is nothing in the literature on the possible connection of Hittite *mieu-* and Luwian *mauwa-* 'four' with Chinese *mau*[3] 'the fourth of the earthly branches'. The classic explanation of the etymology of the Anatolian numerals for 'four' is that this word was of Indo-European in origin. But there is evidence that it may also be Sino-Tibetan, especially Chinese, the phonetic form of *mV-* in the sense of 'four' and the like makes a surprisingly good showing in Sino-Tibetan languages. In what follows I will compare the numbers 'four' and the time series for 'the fourth' occurring in the Chinese ganzhi calendar and in the zodiac time measurement practiced by certain peoples in Asia. With this comparison, we are now in a position to understand the cultural reason that the names for 'four', and 'the fourth series' in the traditional Chinese calendar, and 'rabbit' as the fourth series in the zodiac calendar are distributed throughout Eurasia[3].

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[3] The following abbreviations are used below: Kor: Korean, OE: Old English, OIce: Old Icelandic, OIr: Old Irish, ToA: Tokharian A, ToB: Tokharian B, WMo: Written Mongolian.

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(1) Hittite *mieu-*, *miu*, Luwian *mauwa-* 'four'
Hakka *mau*, Cantonese *māu*, Wu *mæ*, Minnan *bau* 'the fourth of the earthly branches'
Miao *mo*, Bunu *mau*, Mian *māu*, Biaomin *mau* 'the fourth of the earthly branches'
Zaiwa *myi*, Achang *mi* ~ *mɯ* ~ *mɛ* 'four'
Buyi *mau*, Tujia *mautʰauli* ~ *mautʰoli* 'rabbit'
Kor. *mahun* (< **ma-*) 'forty', *maru* (< **ma-*) 'floor board, floor', *maur* 'village'

Since the decipherment of the cuneiform Anatolian scripts it has been known that the Anatolian group, unlike any other Indo-European groups, possessed a unique set of numerals for 'four'. Fragments of this set are preserved in Hittite and Luwian. Scholars have identified the above-listed numerals 'four' in Anatolian. However, there are slightly different transcriptions for the Anatolian words for 'four'. In addition to those listed in (1), Eichner (1992:78, 79) provides *mauwi-* and *mau-*? for Luwian and points out: "The numeral sign '4' has also the phonetic values *mi*, *ma*, which have been derived from the numeral according to the acrophonic principle". Gamkrelidze and Ivanov (1995:743) transcribe the words in the form of Hittite *me(i)u-* and Luwian *mawa-*.

As the Chinese ganzhi calendar is very old, the Chinese time series *mau*^{3} 'fourth' was probably attested in written forms earlier than those of Anatolian, being used throughout history in China. This usage affords valuable evidence that the time depth of both Anatolian and Chinese words is comparable. Although Chinese *mau*^{3} with its dialectal forms does not come down to us as a number for counting, its cognates are well preserved in such Sino-Tibetan languages as Achang *mi* ~ *mɯ* ~ *mɛ* and Zaiwa *myi* 'four'. As we can see, the variant Sino-Tibetan forms for 'fourth, four' correspond well to those of Anatolian. It is pretty possible that the Tujia word *mautʰauli* ~ *mautʰoli* consists of the two morphemes: *mau* and *tʰauli* ~ *tʰoli*. The former goes with the Chinese dialectal words in (1), and the latter is similar to those in (2) below, particularly Lisu *tʰola* 'rabbit'. Combined together, the Tujia word may have initially meant 'the fourth-rabbit' analogous to Chinese *mautʰu* 'the fourth-rabbit'. The morpheme *mau* here serves as an ordinal prefix, as is of great importance for us to learn that people did put an equal sign between the fourth time series and the rabbit in time-reckoning.

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In its native lexicon Korean has the suppletive forms for 'four' *nes* and 'forty' *mahɯn*, while it also uses the numerals for 'four' *sa* and 'forty' *sasip* (*sa* 'four', *sip* 'ten') which were borrowed from Chinese. I assume that the Korean word *mahɯn* 'forty' with its root form **ma-* 'four' has a connection with Chinese *mau*^{3} 'fourth'. Furthermore, the Korean root **ma-* in its geometric sense of 'four-sidedness' gave rise to new expressions reflecting such a geometric perception as *maru* 'floor' and *maɯr* 'village' listed in (1) with some phonetic endings. In other words, these Korean words owe their homophonous root **ma-* to their geometric and arithmetic quaternary abstraction such as four with the decade added, four-sided floor and four-sided village. From the microscopic point of view, as I argued for the importance of the words for 'four, square' in the nomenclature of villages (Wang 1998), villages may well be named after the words for 'four, square'. In further support of my position, I would like to add three more examples. First, in the Cun language spoken in the Hainan Island, China, Chinese *faŋ* (Cantonese *fɔŋ*) 'square' renders *fɔ̄n* 'village'. Second, Solon *jalaŋ* [ʧalaŋ] 'community' is related to Tajik *cal* [ʧʰal] 'forty'. In the latter case, the Tajik word *cal* 'forty' was perceived as four with decade deleted. Third, Hexi *de* 'four' has a connection with Tajik *de* 'village', which serves as a terminal element of many village names such as *varšide* 'the *varši* village', *xinde* 'the *xin* village', and *waχuʒde* 'the *waχuʒ* 'village' (Gao 1996:37). It is difficult to trace the path from one language to another, but we do have a recurrent semantic parallel between the number four and the words for 'village, cropfield'.

In what follows I will provide three more examples showing the cross-linguistic sequential matching between the number four and the words for 'rabbit' as the fourth series in the zodiac calendar.

(2) Hakka *tʰu*, Mandarin *tʰu*, Cantonese *tʰou*, Minnan *tʰɔ* 'rabbit'
Lisu *tʰola*, Pumi *tʰoli*, Maonan *tu* 'rabbit'
Salar *došen* (**do-*) 'rabbit'
WMo. *dörben* (< **do-* ~ **dö-*) 'four', *döcin* 'forty'

(3) ToA. *śtwar* (< **śitwar*), ToB *śtwer*, *śwer* 'four'
Hakka *sei*, Cantonese *sei*, Mandarin *si* 'four'
Buyi *si*, Tujia *ze* 'four'

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Tajik *sɯi* (Wux dialect), Hexi *səu*[4] 'rabbit'

It should be noted that, without making comparison with the Tokharian words in (3), based on the Sino-Tibetan internal phonology, scholars have reconstructed **sǐēt* for the Chinese words in (3) (see Ma et al 1994:40). I prefer to restore it as **sit*. Both reconstructed forms get the Sino-Tibetan words for 'four' closer to those of Tokharian.

(4) Latin *quattuor* 'four'
ToB. *keta* 'farm, field, estate', Hittite *kutruwan-* 'witness'
Tajik *xutɯm* (Sariqul dialect) 'rabbit'
Tuva *kodan* 'rabbit'

According to Eichner (1992:80), Hittite *kutruwan-* is to be analyzed as **k^{w}tru-(y)ó-n-* or as **k^{w}tr̥w-(y)ó-n-*(?) 'the fourth' with the cardinal **k^{w}tru-* (cf. Greek τρυφάλεια, Avestan *caθru-*, Latin *quadru-*). The semantic shift from 'the fourth' to 'witness' is suggested on the basis of the following statement: 'If the judge is considered as a major party in the case, he will normally be the *third* person present, and the witness, when called, will obviously be the *fourth*' (citing Eichner 1992:81).

In the eyes of early people, the rabbit was not merely an animal but it was also charged with the fourth series in the zodiac calendar. The names of the rabbit may be different from language to language and from dialect to dialect. Within Sino-Tibetan we have Buyi *mau* in (1) and Chinese *t^{h}u* and Lisu *t^{h}ola* (**t^{h}o-*) in (2). In the Turkic group the rabbit can have three sets of different names, two sets of which are relevant to the theme of the present discussion: Salar *došen* (**do-*) in (2) and Tuva *kodan* in (4). Tajik is a language of the Iranian group, and in China it is divided into two dialects: Sariqul and Wux (Gao 1985:1). Significantly, each of the Tajik words for 'rabbit' in the two dialects, *sɯi* in (3) and *xutɯm* in (4), corresponds to Cantonese *sei* 'four' and Latin *quattuor* 'four', respectively. These cross-linguistic and dialectal differences in the names of the rabbit and their correspondence with the numerals for 'four' are a

[4] This Hexi word is transcribed with a Chinese character pronounced now *tsəu*.

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piece of illuminating evidence that the matching in the series for 'four' is by no means isolated and accidental[5].

Through these comparisons, the time series attain greater importance than ever for the study of numerals only when they enter into correspondence in phonetics with the corresponding numerals elsewhere in the region. If there being correspondence of this kind, they may have pinpointed the historical period when the different peoples came into linguistic and cultural contact.

3. Luwian *mauwa-* 'Four' and Chinese *mau²* 'Anchor (with Four Flukes)'

Many things in the universe intrinsically possess the features which may be potentially quantified. For instance, the human body alone contains two hands with five fingers each, a pair of ears and eyes, several visible teeth when the mouth is in open condition, and numerous hairs. The human ability to perceive the things of this kind quantitatively, whether limited or unbound for different people at different times, is an universal experience and habit of human intelligence. Accordingly, quantitative thinking was dynamic; it always existed in the minds of people as abstract ideas and was likely to crystallize its sources — numerals — into concrete perception and naming at the expense of losing their numerical function. Thus, many nouns may be etymologized with certain numerals cross-linguistically or within a language. This is particularly true of the nouns having countable features such as the anchor, comb, star, hand, and octopus, which come along with a clearly visible or perceivable set of projections. As the once existing numerals were petrified in certain nouns, as I assume, there was a period of time in Chinese history when the etymon of Chinese *mau²* 'anchor' served to be the number word for 'four' or 'fourth', but it lost its signification of number by being stuck in the ordinary noun for 'anchor'. In turn, the sources of numeration may be drawn from

[5] In my recent conference paper (Wang 1999) I have given a preliminary analysis of the transcontinental parallels between time series and number words in Eurasia. It suffices to provide a couple of examples here: Mongolian *unun* ~ *una* 'rat, rodent' (the first of the zodiac calendar) is related to Latin *ūnus* ~ *ūna* 'one', Mongolian *koyar* 'two' to Tokharian *kayuṛṣ* 'bull' (the second), Manchu *tarfu* 'tiger' (the third) to Tokharian *tarya* 'three' and so on.

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certain nouns bearing quantitative features. As the slot for a given numeral usually could not accommodate redundant ones as abstract counting was developing, the possibility arose that one of the coexisting and competing numerals to shift to and be stuck in nouns as happened to Chinese *mau²* 'anchor'.

The connection between Luwian *mauwa-* 'four' and Chinese *mau²* 'anchor' cannot be treated as accidental resemblance, because the similar semantic connections may occur to some other languages. For instance, in the language of one Negro tribe 'four' is called 'two forks'; the Abipone Indians say 'rhea toes' for 'four' because the kind of rhea (ostrich) with which they are familiar has four claws (Menninger 1969:119-120). As widespread use of numerals has continually fed into noun-naming, it followed as all who used numerals to name relevant things they regarded as relevant to the numbers three, four, five, and so on. One of the single most important elements in what is often called semantic shift is precisely this application to what are now the nouns 'comb', 'rake', 'rasp', 'teeth', 'anchor', and 'octopus'. I can best illustrate this cognitive process by examining the cases in different languages. In Table 1 I exemplify this process.

The fact that the words in the right column do not literally denote numerals may not be too troublesome, since it is easy enough to see the semantic connections between the number words in the left column and the corresponding quantitative or geometric images reflected by those listed in the right column. The anchor with its several flukes is a device keeping a vessel for drifting and comb is a tool with teeth. These words today do not seem at first glance to have much to do with the numerals for counting. Nevertheless, investigation of the names of such tools that have a few countable flukes or teeth is truly as important as any number word is. So we should be especially aware of the fact that it is these countable things that constitute eventually a crucial area on which to focus, presenting a rewarding result. This is a logical continuation of and addition to the cognitive approach developed by linguists. Polomé (1968) elucidated the connection between the word for 'hand' and the numeral for 'five'. Following this analysis I propose an etymological connection of Dagur *tāw* 'five' with Old English *tā* ~ *tāhe* 'toe' (formerly also meaning 'finger') and extend this connection to the Solon word *tawuŋka* 'anchor'. In short, it was the numbers that were in fact highly dynamic and inclusive in contents.

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Table 1: Semantic parallels between number words and certain naming.

Number Words	Related Naming
Cantonese *sām* 'three'	WMo *sam* 'comb', *samna-* 'to comb'
Yi *sɔ*, Nusu *sɔ* 'three'	Cantonese *sɔ*, Cun *sɔ* 'comb'
Yakut *üs*, Kazak *üš* 'three'	Manchu *usiha* 'star, acorn', *ušiha* 'acorn', *ošo* 'leather glove with three fingers', *ošoho* 'claw, talon'
ToB *trai* ~ *tarya*, ToA *tre* ~ *täryā-* 'three'	Kazak *tarak* 'comb', *tara-* 'to comb' Kazak *tërma* 'rake', *tërmalaw-* 'to rake' Tibetan *termo* 'claw'
WMo *dörben* 'four'	Old Turkic *törpig*, Turkish *törpü* 'rasp, large file'
Cun *hau* 'four'	Lingao *hau* 'file'
ToA *śtwar*, ToB *śtwer* 'four'	WMo *sidün*, Monguor *ṣdë* 'tooth'
Hittite *mieu-* 'four'	Manchu *merhe* 'comb', *merhe-* 'to comb'
Hittite *mieu-*, (*ma*) 'four'	Dagur *maltuğ* 'rake', *malt-* 'to rake'
Luwian *mauwa-* 'four', Chinese *mau* 'fourth'	Chinese *mau* 'anchor'
Dagur *tāw*, Dongxiang *tawun* 'five'	Solon *tawuŋka* 'anchor'
Manchu *ninggun* 'six'	Manchu *ninggiya* 'anchor'
WMo *naiman* 'eight'	WMo *naimaljin* 'eight-legged crab'
Baoan *nimaŋ* 'eight'	Manchu *niomere* 'octopus', Kangjia *niʉmɘre* ~ *nimɘre* 'knot button (for dress)'
Greek *octṓ* 'eight', (*poús* 'foot')	Greek *octṓpoús*, English *octopus*

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Whether Mongolian, Kazak, Solon, Manchu, Dagur, Chinese, and Greek, the speakers kept a watchful eye on the countability of these things.

Concerning Table 1, there are several points I would like to explain. The first point to note is that the Altaic words for 'comb' and 'rake' simultaneously have their verbal counterparts; the nominal and verbal forms either remain zero-derivative as in Manchu *merhe* 'double-edged fine-toothed comb' or may be derived from each other. WMo *samna-* 'to comb' forms from *sam* 'comb' by the verb-forming suffix *-na*, so does Kazak *tërma+law-* 'to rake' from *tërma* 'rake'. On the other hand, the nouns may be derived from the corresponding verbs: Dagur *maltuğ* 'rake' is from *malt-* 'to rake', so is Kazak *tarak* 'rake' from *tara-* 'to rake'. If we give further morphological analysis of Manchu *merhe*, *usiha*, *ušiha*, *ošoho* and Dagur *malt-*, we can divide Manchu *merhe* into **me+r+he*, *usiha* into **usi+ha*, *ušiha* into **uši+ha*, and *ošoho* into **ošo+ho*. The vowels *e* ~ *a* ~ *o* of the suffix variants *-he* ~ *-ha* ~ *-ho* were affected by the preceding vowel *e*, *u*, and *o* in the root **me-* and **usi-* ~ **uši-* ~ **ošo-*, respectively, in accordance to vowel harmony. As for the Dagur verb *malt-* 'to rake', it developed from the early form **ma+l+ta-* (cf. WMo *malta-* 'to dig'). In this way, the Manchu root **me-* and the Dagur root **ma-* are both close to Hittite *mieu-* (or *ma*) 'four', and the Manchu root **usi-* ~ **uši-* to Yakut *üs* and Kazak *üš* 'three'.

Secondly, as a rule, semantic change through time is inevitable to the lexicon of a language. In addition to the sense of 'to comb or dress the hair', WMo *samna-* means 'to shear wool'. As the Mongols were heavily engaged in nomadic activities with sheep and cattle in history, they compared and extended the meaning of 'to comb' to 'to shear wool', for both actions have something in common: touching the hair or wool with a tool. In this semantic context, I shall discuss ToB *mark-* and ToA *märtk-* 'to cut (the hair), shave (the head)' and compare the two words with Manchu *merhe-* 'to comb' and Dagur *malt-* 'to rake'. Judging from their phonetic shape, ToB *mark-* is similar to Manchu *merhe-* (or *merge-*), and ToA *märtk-* to Dagur *malt-*. If we consider both meanings of WMo *samna-* 'to comb the hair' and 'to shear wool', we may reduce or overcome the semantic gap between Tokharian *mark-* ~ *märtk-* 'to cut (the hair), shave (the head)' and Manchu *merhe-* 'to comb'. Unlike the Altaic words for 'to comb' and 'to rake' in Table 1, to the

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best of my knowledge, the Tokharian verbs are not attested for their nominal counterparts. If they were, they would have meant a tool something like comb or rake. All of these considerations help to reinforce the answer that the Tokharian verbs came up ultimately with the Hittite numeral *mieu-* (or *ma*) 'four'. This is a relic of semantic change from earlier time when the Tokharian word cognate to the Anatolian numeral for four shifted its meaning of 'to comb' to 'cut (the hair)'.

Thirdly, Cantonese *sām* 'three' pronounces *san* in Mandarin, mainly differing in the final nasal *m* ~ *n*. This difference is also reflected in the Mongolic words: Monguor *sam* 'comb', Dongxiang *san* 'comb', Dagur *sann* (< **san*-) 'comb', *sann-* 'to comb', and Kangjia[6] *san* ~ *saŋ* 'comb', *sama-* 'to comb'.

Fourthly, the words for 'comb' and 'rake' coexist as a doublet in Kazak and other Turkic languages[7]. That is, Kazak derived both *tarak* 'comb' and *tërma* 'rake' from what was represented by the Tokharian numeral *tarya* ~ *täryā-* 'three', as *tarak* and *tërma* both contain the root forms **tar*- and **tër*-, differing only in the vowel quality *a* and *ë*. Indeed, striking is the degree of the phonetic similarity between the two related forms *tar-(ak)* and *tër-(ma)* on one hand and of the semantic correlation between the meanings 'comb' and 'rake' on the other. Once we realize this correlation, we gain confidence to compare the two words with the Tokharian numeral for three. The file as a tool has countable ridged surface as evidenced in the same manner by the semantic correlation between Old Turkic *törpig* 'rasp, file' and WMo *dörben* 'four' and between Cun *hau* 'four' and Lingao *hau* 'file'[8]. Given this cognitive tendencey to name the tools in common use with the number words for three and four, we can assume that some other tools such as a

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[6] The Kangjia language is a newly discovered Mongolic language spoken in the Qinghai Province of China (Siqin 1999).

[7] In the Turkic languages spoken in China these two words exhibit pretty similar phonetic shapes: Uigur *taʁak*, Kirgiz *tarak*, Uzbek *tärak*, Tatar *tarak*, Tuva *dɤrʁak*, Salar *daraχ*, WYu *darğak* 'comb'; Uigur *tirna*, Kirgiz *tërmök*, Uzbek *tirna*, Tatar *tërma* ~ *tërna*, Tuva *dɤrbɤrš*, Salar *darmaχ* 'rake'.

[8] The Lingao and Cun languages are both spoken in the Hainan Province of China. The data used in this paper are taken from Liang and Zhang (1997) and Ouyang (1998).

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chisel may be named after the number words though they were less likely to be perceived quantitatively, e.g. Lingao *sam* 'chisel' may have a connection with Cantonese *sām* 'three'.

Fifthly, Greek *octṓpoús* 'octopus' can be broken into two free morphemes *octṓ* 'eight' and *poús* 'foot'. But WMo *naimaljin* 'eight-legged crab' is made up of one free morpheme *naiman* 'eight' which is suffixed by the bound morpheme *-ljin*, i.e. *naiman+ljin* → *naimaljin*, with loss of the final nasal *n* in the word *naiman* in the morphological concatenation. The meaning '-legged' is not carried by a lexical element in the resultant word *naimaljin* 'eight-legged crab' as in Greek *octṓpoús* 'octopus', so the meaning must be understood by the derivative suffix *-ljin*.

Sixthly and finally, Chinese *mau*^{2} 'anchor' as a separate word cognate to Chinese *mau*^{3} 'the fourth of the earthly branches' provides independent cognitively-motivated evidence for the proposed connection with Luwian *mauwa-* 'four'. Chinese historical artists and writers perceived the anchor as consisting of four flukes. We have some archaeological and documentary pieces to prove this perception. A pottery model of a boat excavated in Guangzhou City and dated back to the period of the Eastern Han (25-220 AD) has four flukes at the front of the boat, among which one fluke in turn has a V-shaped projection for the ease of a rope fastening. During the Yuan dynasty (1271-1368), a writer described how an anchor with four flukes was broken under storm at sea. The passage can be translated approximately as follows: 'There is a big iron anchor which weighs several hundred kilograms in a ship. When the ship came across a storm, it dropped its anchor down into water. But the storm was strong enough to break the four flukes of the anchor'.

At the level of morphology, the Chinese morphological process in relation to affixation is not rich as those of Altaic and Indo-European. This was the reason for not having any affixing element in Chinese *mau*^{2} 'anchor', whether lexical or grammatical, compared with Solon *tawuŋka* out of *tawuŋ+ka* and Manchu *ninggiya* out of *ninggi+ya*, but Chinese found a compensation for this by creating different characters. In this case, *mau*^{3} 'the fourth of the earthly branches' is written 卯 bearing tone 3, and *mau*^{2} 'anchor' is written 錨 with tone 2. The latter character is composed of the lateral radical 金 (*tɕin*) 'metal' in the left and the character 苗 pronouncing *miau*^{2}. This structural makeup implies that the radical's meaning 'metal' stands for the material from which the anchor was made, and

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the character pronouncing *miau*^{2} served as a rough phonetic guide for the word *mau*^{2} 'anchor'. Keeping the tonal distinction between the two words *mau*^{2} 'anchor' and *mau*^{3} 'the fourth of the earthly branches', we should note that the most important historical factor in the growth of the Chinese vocabulary has been the ease with which it has created tones for suprasegmental distinction between the phonetically identical words. I stress that apart from these specific morphological, phonological, and orthographic differences, there is an essential commonality generated by the unitary strains of cognitive process that is cross-linguistic and cross-cultural.

Although intimate language contact took place in early history between Chinese, Altaic, and Indo-European, it was unlikely that the contact itself would give rise to a parallel shift between the numerals 'four, five, six' and the word for 'anchor' represented by Chinese *mau*^{2}, Solon *tawuŋka*, and Manchu *ninggiya* in Table 1 as a means of semantic change. It is more likely that, having spontaneously developed out of the same cognitive mechanism and being brought under the same demand for lexical proliferation, Chinese, Manchu and Solon converged with the similar way of semantic extension and quantitative naming. As the cognitive process has taken the same direction toward naming of the anchor by then existing numerals, it did not matter that the responses from the speakers of different languages were slightly different in the value of the numbers of four, five, and six, but they reflected the same cognitive process. Moreover, this cognition takes on a sustained vitality in naming the other things such as comb and octopus. The fluctuations in the reference of the numbers in denoting 'anchor' in Chinese, Solon, and Manchu made it clear that speakers did not conceptually pursued mathematical accuracy, for speakers the greater the range of numerical alternatives that could be abstracted was, the better. It was in their first opportunity to name an emerging thing when whichever numeral suitable for that purpose. That some other languages did not develop the same naming does not necessarily mean that either the naming of anchor or the naming of comb were essentially different. It may imply only that for any given quantification, every language may have a range of mental computations needed for naming relevant things.

WMo *naimaljin* 'eight-legged crab', Manchu *niomere* 'octopus', and English *octopus* are created exactly in the same way, being based on the numerals for 'eight'. It is, however, important to note that

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only by cross-linguistic examination will we able to know that Manchu *niomere* derived from the numeral for 'eight', because not the Manchu numeral *jakūn* 'eight', but WMo *naiman* and Baoan *nimaŋ* 'eight' which gave rise to the word *niomere* in Manchu. Manchu *usiha* 'star, acorn', *ušiha* 'acorn', *ošo* 'leather glove with three fingers used for holding falcons', and *ošoho* 'claw, talon' in Table 1 all developed historically from the root **usi-* originally meaning 'three'. It is not difficult to understand this meaning if we consider the word *usiha* to mean 'a set of three stars' or 'three (or five)-pointed star' and the word *ošoho* to mean 'horny structure with three pointed nails', not to mention *ošo* ostensively meaning 'glove with three fingers'. All these semantic shifts are quite constant from word to word. These words came into being during three successive periods in the evolution of Manchu lexicon accompanied by phonetic changes. Over a long period of time, these words came to differ in certain phonetic respects. First, the vowel *u* of *usiha* raised to *o* in *ošo* and *ošoho*. Second, the sibilant *s* of *usiha* was palatalized as *š* of *ošo* by the following vowel *i*. Third, the resultant vowel *o* further assimilated the vowels in the following syllable(s).

Today, without intensive examination, few people would think of this relationship, a relationship that the initial namers realized much more clearly than we do now, because the names in the right column of Table 1 lost their signification of numbers in their current usage. For the early speakers, naming of these things went hand in hand with numerals. The numerals are undoubtedly 'the basic words' as that phrase is generally used in linguistic studies. It is this fact that lays a more solid foundation upon our research. These words may conceivably have been frequently used in everyday communication, thus they were of critical importance in nomenclature. These similar experiences were the formative influences on speakers' construction of the meanings of 'anchor, comb, octopus' and the like. There are patterns in this cognitive process, and they remain basically unchanged over time as the following Chinese expressions contain numerals: *santɕiautɕia* 'three-footed frame' (tripod), *wutɕiaotɕiŋ* 'five-pointed star', and *patɕiau* 'eight-angled' (aniseed). As regards the people who first approached the anchor in terms of numerical and geometric computation, we find cognitive signs of their learning and knowledge. The numerical and geometric comprehension which was necessary to make such a naming speaks for itself; and yet it is to such a comprehension that

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we trace the early use of the Chinese time series *mau*^{3} 'fourth' as a number word in Chinese, or in a language spoken by some people during the Shang period.

As many researchers have pointed out, there once was a counting pattern in early times: one, two, many. As a tool, the comb usually contains more teeth than the rake and anchor. Although we have no information on how many teeth there were in a comb when it was named after the number three, the combs excavated in some ancient remains have more than three teeth. In our case, the comb is correlated with the number three or four. I assume that the numbers three and four that were used to name a comb were not necessarily three and four in an arithmetic sense. Instead, they were used in the sense of 'many' as the counting pattern 'one, two, many' suggests. Once this pattern is understood, it becomes reasonable to claim that the numerals used for naming such tools reflected a quantitative process in the human mentality.

4. Luwian *mauwa-* 'Four' and Cantonese *mau*^{5} 'a Traditional Measure Unit of Land Area'

How did the Inner Asian people practice demarcating and measuring land size? Through some extant documents written in Tokharian and Old Uigur we can see that people habitually set up the four cardinal points: east, south, west, and north. Pinault (1998:364) provides a valuable piece of evidence for this practice. The Tokharian B document Pinault analyzed is obviously a contract for the sale of a piece of land. The relevant passage concerning the quadrilateral delimitation is translated by Pinault as follows: Of this estate pertaining to the domain of the monastery, on the east the boundary is the river Armoki, of the south, the boundary is the arm of the river Yāte; on the west the boundary is the great canal; on the north, the boundary is the arm of the river Armoki up to the great canal inclusively (365). The piece of land (or farm, field) for sale is represented by the Tokharian B word *keta* (whose underlying shape is *ketā*, see Adams 1998:373). In (4) I have etymologically connected the Tokharian word with Latin *quattuor* 'four'. Li (1996) published a collection of the extant Old Uigur documents, among which are a number of contracts for the sale or exchange of cropfield or vineyard. Most of the contracts use the same method as that used in the Tokharian B document by clearly delimiting the four

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boundaries of the land by indicating the terminating or adjacent objects in sight.

The cognitive significance of this practice lies at the very heart of the nature of the number four. The development of farming in Eurasia prompted people to learn how to name a field and a measure unit, and this situation was made easy for the number four to circulate as far as possible, since the very existence of four-sided cropfield could trigger a terminological boom for the words for 'four' in various languages. The possibility to disseminate most needed words was a characteristically true of all number words in Eurasia, whether they were belonging with Chinese, or with Altaic, or with Indo-European. With the passage of time number words became less binding upon their original function of numeracy in the course of their diffusion.

The Chinese (Cantonese) word *mau*$^{\cdot 5}$ (whose dialectal counterparts are: Mandarin *mu*, Wu *mɤ*, Xiang *məu*, Gan *mɛu*, Hakka *mɛu*, Mindong *mɛu* ~ *muɔ*, and Minnan *bɔ*) was already among the agricultural terms for 'farmland, cropfield' during the Shang period and since has been a common unit for measuring cropfield and area down to the present day. This classifier is widely distributed in Sino-Tibetan (such as Zhuang *mau*, Zaiwa *mu*, Lahu *mu*, Nusu *mu*, Shui *mu* ~ *mau*, Mian *mou*, Bunu *mɤu*, Lajia *mau* 'a measure unit of area', and Qiang (Mawo dialect) *βu̥* < **mu* 'a large piece of soil') and borrowed into Altaic (such as Manchu *mu* and Kazak *muw* 'a measure unit of area'). The existence of numerous classifiers is one of the characteristic features of the Chinese language. The Chinese, for example, does not say directly 'four tables', but '4 *ʦaŋ* tables' — something like '4 leaves tables'. The word *ʦaŋ* here is the number class in which all things characterized by an extent of surface are counted: tables, beds, sheets of paper, etc. (cf. Menninger 1969:455). As a measure unit of land size, Chinese *mau*$^{\cdot 5}$ is functionally similar to English *acre* 'field; unit of square measure of land'. According to English etymologists, English *acre* (OE *æcer* 'field, cultivated land') is related to Latin *ager* 'field, estate'. In ancient China of the Zhou period (c.1100 BC-256 BC), land area was measured by the unit *mau*$^{\cdot 5}$ on the basis of the so-said well-field system. In turn, the unit *mau*$^{\cdot 5}$ was counted by the unit *pu* 'step, a measure of length'. According to Chinese historical records, one *mau*$^{\cdot 5}$ represented one hundred square steps. In addition, Chinese *mau*$^{\cdot 5}$ referred to furrows or ridges in a field displaying a set of countable stripes like ||||| in the eyes of people.

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Thus, the Chinese measure unit *mau*^{5} was perceived as a four-sided (square or rectangular) piece of field, being etymologically connected with Luwian *mauwa-* 'four' and possibly with ToA *miṣi* (**mi-*) 'field', Hexi *mišge* (**mi-*) 'imperial town', *mipu* (**mi-*) 'palace' as well as Jino *mɤ* 'town'.

The cognitive correlation represented by the connection of Chinese *mau*^{5} 'a measure unit of cropfield' with Luwian *mauwa-* 'four' is by no means the only one; and the ways in which the words for 'four' gave rise to the expressions relevant to four-sided geometric figures are basically similar cross-linguistically. To pursue this question further, let us consider the following two similar cases. Firstly, as far back as the Shang period the Chinese word *p*^{h}*u*^{3} (Cantonese *p*^{h}*ou*^{2}, 圃) was already used along with Chinese *mau*^{5} as an agricultural term for 'field' and now it means 'garden' (for fruit trees, melons and vegetables) which is usually in a quadrilateral figure. This word might have had a connection with Gelao *pu* ~ *p*^{h}*ɐu* ~ *po*, Blang *pun* ~ *pon* 'four', Tibetan *po*, Qiang *pu*, Tujia *p*^{h}*o* 'a unit of dry measure for grain, cubic container for dry measure' within the Sino-Tibetan family and further with Tokharian *por* 'village' and Rigveda *pur* 'rampart, fort'.

Secondly, the Tungusic words for 'forty' are: Jurchen *dehi* ~ *tehi*, Manchu *dehi*, Solon *dëhi*, Hezhe *dëhi*, and Orochun *dëki*. I would like to relate these words with Sanskrit *dehī́* 'wall' and Greek *teĩkhos* (τεῖχος) 'wall' (as four-sided enclosure). Moreover, in addition to the Chinese loanword *mu* 'a measure unit of area', Manchu has its native measure unit *deken* 'a *mu* – a measure unit of area'. For example, in the Manchu phrase *emu deken usin* 'one *deken* field', the unit *deken* serves to measure the field represented by Manchu *usin*. In my analysis, Manchu *deken* derived historically from Manchu *dehi* 'forty' by showing the phonetic matching between the consonants *k* and *h* and may have initially meant 'four-sided field', with decade deleted.

This cross-linguistic examination of the names for four-sided field and enclosure as well as for a measure unit in terms of the number four can lend us a further support for what I am proposing in this paper. When we integrate the phonetically similar words in related senses, we will be able to see that the cognitive significance of the number four in everyday speech had constantly created the more general nomenclature for four-sided figures. With the wide spread of farming in Eurasia, the number words for four were thus

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directly linked to what people took to be the sense of 'field, measure units' in everyday communication no matter whether by original coinage or adoption.

5. The Number Four and the Nomenclature of Four-footed Animals

The form *mV-* in the sense of 'horse' is seen in Sino-Tibetan (Chinese *ma*, Tujia *ma* ~ *mo*, Bai *mɛ* ~ *me*^{1} ~ *mo* ~ *ma*, Hani *mo*), Altaic (with the exception of most Turkic languages, WMo *morin* and Manchu *morin*), Korean (*mar*), and Celto-Germanic (Welsh *march*, Gaulish *márkan*, OE *mear* ~ *mearh*). Despite this widespread distribution, the general tendency of research in the area has been either to minimize the significance of this similarity or to argue for the formation of migratory terms. These approaches are not far-reaching enough to account for the similarity, because there are also internal processual derivations of the related words within certain language groups. In Gamkrelidze and Ivanov (1995:463-480) and Janhunen (1998), the particulars concerning this similarity in the words for 'horse' in Eurasia and the extent of their distribution have been collected with considerable breadth of survey and criticism. Gamkrelidze and Ivanov (1995:473) point out: 'The word is plainly a migratory term which spread throughout the languages of Central and East Asia, whence it could have entered the Celto-Germanic dialects'. Unlike Gamkrelidze and Ivanov, Janhunen (1998:426) is quite skeptical about the proposed etymological connection by arguing that 'This is, unfortunately, an equally unlikely possibility both for geographical and linguistic reasons'. To the best of my knowledge, the existing researches have not attempted to tackle the problem along the line of general abstraction in combination together with the other phonetically similar words for certain beasts. The problem, therefore, is not simply one of picking out the words for 'horse' from the areally related languages for comparison, there is also a need to scrutinize the words for 'horse' with one another and in combination with the phonetically similar words for some other beasts. From this cognitive perspective, I shall continue to hold a cognitive approach to catch the point, giving full consideration of how and why people had recurrently used the form *mV-* to name quadruped animals including the horse.

In the foregoing discussions we have already seen that people had observed the interrelationship between the number four and the

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square figures; and this observation may be extended in the same manner to the quadruped nature of certain beasts such as horse and dog. The evidence, it is true, comes down to us from Indo-European. Question connected with the biped / quadruped opposition has been treated extensively by Gamkrelidze and Ivanov (1995), who state that: "The terms 'two-legged' and 'four-legged' as well as their opposition go back to Common Indo-European times and are reflected in many historical Indo-European dialects" (395). According to their frame of interest they devoted a few pages to the discussion of this early Indo-European perception. I consider this perception to be my point of departure in seeking for the possibility for connecting the words for 'horse' in Eurasia with the numerals for 'four' and in bringing forward additional evidence of the cognitive mechanism. Gamkrelidze and Ivanov (1995:394-5) argue:

> Together with the speaking / non-speaking feature, the opposition of human to domestic animal is realized with the help of the more concrete semantic feature of biped / quadruped, based on the external form of the opposed referents. This opposition can be established from Sanskrit, Greek, and Hittite evidence. In Sanskrit and Italic we find etymologically identical terms for 'two-legged' (i.e. people) and 'four-legged' (i.e. domesticated animals): Sanskrit *dvi-pád-*, *cátuṣ-pad-* (over 20 occurrences in the Rigveda) ... (further references therein).

In discussing the Anatolian numerals 'four' and their derivatives, Eichner (1992:75) mentions the Hittite expressions 'standing with four legs' and 'they drink out of a calf's rhyton standing on (all) four feet'. According to his textual analysis, Hittite *mieu-* may stand without additional substantive for the parties concerned in a collective of four, and it could be a case of special collective nomenclature (76). Menninger (1969:180) has argued more forcefully by concluding with some examples of the way in which a pure number word can become the name of an object. In the Celtic group of languages the Irish *cethir* 'four' has also come to mean 'cattle' (= 'four-footed'). Frenchmen use the word *quatrain* (and also *sixain*) for the goldfinch, because this bird has 4 (or 6) white spots on its tail. The same is true with Chinese. In ancient China, from Chinese *si*^{4}(**sit*, 四) 'four' derived a new word *si*^{4} denoting 'a team of four horses dragging a chariot, horse'. The pronunciation of

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both words is just the same. It is, however, interesting to note that the latter word (駟) graphically consists of two componential parts: one in the left is the character for 'horse' and the other in the right is the character for 'four'. Apparently, the numerals for four are indeed mobilized in describing a collective of four legs.

But why did the horse receive the prominence of being phonetically similar with numerals for 'four' in many Sino-Tibetan languages having the phonetic shape of *mV-* and have the similar names in the different parts of Eurasia (from Europe to China and to the Korean Peninsula)? Particularly, the domestication of the horse in a certain area and its subsequent diffusion outward represented a very important progress in human economic and military activities, since the horse was of dynamic power and speed. Generally, this nomenclature was a practical and cognitively motivated result. Now if we seek to know what characteristic features were caught by early people by the time when they approached to name the horse, we will be tempted to assume that it was the four legs of the horse that intrinsically triggered this nomenclature. Even today, people name some vehicles by observing how many wheels they have such as bicycle, tricycle, and four-wheeled vehicle. This perception arose independently in many different languages. As human beings are biped, they are unmarked by themselves, but they are sensitive to the quadruped feature of animals. In this sense, the fact that horses stand on four legs stroke the attention of people and admitted of cognitive perception. People have acquired the number four before they got acquainted with the horse. When they first saw the horse they used the words for four to denote it. The horse was in turn used to denote a four-legged structure on which something is supported such as English *sawhorse* and *gym horse*.

The words that have the phonetic setting of *mV-* denoting quadruped animals are widely distributed in the Zhuang-Dong group of the Sino-Tibetan languages, of which the following in Table 2 are examples.

Going through Table 2, we would raise not only the question of why the form *mV-* is used to designate the horse but also why it recurrently happens to some other four-footed animals in these languages. That is, a question arising with view to this striking similarity is: it is due to a chance or due to a factor cognitively motivated. My answer is: hardly due to a chance. Indeed, the animals listed in Table 2 are different. But this difference could not

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Table 2: The words for quadruped animals in the Zhuang-Dong (or Dong-Tai) group in China.

	Buyi	Zhuang	Shui	Maonan	Dai	Mulao	Dong
horse	*ma*^{4}	*ma*^{4}	*ma*^{4}	*mya*^{4}	*ma*^{4}	*ma*^{4}	*ma*^{4}
dog	*ma*^{1}	*ma*^{1}	*ŋ̥a*^{1}	*ma*^{1}	*ma*^{1}		
pig	*mu*^{1}	*mou*^{1}	*ŋ̥u*^{5}	*mu*^{5}	*mu*^{1}	*ŋ̥u*^{5}	
bear	*mɯi*^{1}	*mui*^{1}	*ʔmi*^{1}	*moi*^{1}	*mi*^{1}	*pwa*^{2}*mɛ*^{1}	*me*^{1}
boar	*mu*^{l}*yi*^{6}	*mou*^{l}*tūn*^{6}	*ŋ̥u*^{5}*lāi*^{5}		*mu*^{l}*t'ən*^{5}	*ŋ̥u*^{5}*lāi*^{5}	
wolf	*ma*^{l}*nai*^{2}	*ma*^{l}*nai*^{2}		*ma*^{l}*ŋāŋ*^{2}	*ma*^{l}*nai*^{2}		
cat	*miau*^{5}	*meu*^{2}	*meu*^{4}	*mɛu*^{4}	*mɛu*^{2}	*myāu*^{4}	*meu*^{4}
tiger			*mum*^{4}	*məm*^{4}		*məm*^{4}	*məm*^{4}
monkey			*mon*^{6}	*mūn*^{6}		*mə*^{q}*lau*^{2}	*mun*^{6}
porcupine			*bin*^{3}	*min*^{3}	*min*^{3}	*min*^{3}	*min*^{3}

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prevent people from abstracting the shared feature of 'four-footed' from these animals. In this sense, the words are essentially derivative with the numerals for four. Two arguments can be put forward to rule out a chance similarity.

First, as many scholars have argued convincingly, the tone system in the Sino-Tibetan languages was a late development. Liang and Zhang (1996:5) have pointed out: 'It is possible for a language to alter its typological properties in the sense that it came to acquire, among other things, a tonal system that did not exist in the language at all'. From the phonetic point of view, the existence of vowels and consonants with their combinations is older than the tones attached to vowels; the former system has been found in numerous languages unaccompanied by the latter. The organization of phonetic segments *mV-* adapted to contemporary needs must have occurred before the want of suprasegmental tones would be felt. In Buyi, the words *ma*^{4} 'horse' and *ma*^{1} 'dog' differ in meaning only in their distinct tones; the former is tone 4 scaling from 3 downward to 1 and the latter is tone 1 scaling from 3 upward to 5. I assume that in their initial existence the word **ma* had no tonal distinction, denoting equally quadruped animals such as horse and dog. However, as human cognition increasingly demanded separate names for the different animals though they used to be abstracted for their quadruped feature, the speakers of the early Buyi language had acquired the capability to generate different tones with vowels for different meanings.

Second, the Buyi words *mu*^{1} 'pig' and *mɯi*^{1} 'bear' have auditorily somehow similar but phonemically different vowels bearing the same tone. Like the situation of Buyi *ma*^{4} 'horse' and *ma*^{1} 'dog', these two words were presumably a single word **mu* at the outset of their existence not differing in their vowel quality. But, unlike *ma*^{4} 'horse' and *ma*^{1} 'dog', these two words came to refer to two different quadruped animals by developing the vowel quality **u* into *ɯi* in the word *mɯi*^{1} 'bear'. In the similar manner, the Buyi words *mu*^{1}*yi*^{6} 'boar' and *ma*^{1}*nai*^{2} 'wolf' became different from *mu*^{1} 'pig' and *ma*^{1} 'dog' respectively by way of a syllable addition at the end of the words. The Buyi word *mu*^{1}*yi*^{6} 'boar' has the alternative form *mu*^{1}*zāi*^{6}. Whether or not the syllable *-zāi*^{6} of Buyi *mu*^{1}*zāi*^{6} 'boar' is a morpheme I am not sure. If it is a morpheme meaning something related to an animal, it will of course strengthen my claim that the morpheme *mV-* originally meant 'four' or 'quadruped'. The

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same can be said with this kind of words in Table 2 such as the Shui word *ŋ̊mu*^{5}*lāi*^{5} 'boar' and the Dai words *mu*^{1}*t'ɔn*^{5} 'boar'.

Given this reasoning, I shall argue that these names were indeed cognitively motivated instead of being due to chance similarity. In this way, the specific lexical meanings are less important compared with the general geometric and arithmetic abstraction of human brain. People abstracted a collective of four legs and geometric square figures out of the mass of various individual things. In other words, for the speakers of a language, quadruped beasts and square fields were such traits that were merely abstractions derived from general numerical and geometric computations.

Now I will return to the Chinese situation. Apart from the words *mau*^{3} 'the fourth of the earthly branches', *mau*^{2} 'anchor', (Cantonese) *mau*^{5} 'a measure unit of cropfield', and *ma*^{3} 'horse', Chinese has acquired a few more words derived from the lexeme for 'four(th)': *mau*^{3} 'mortise' (which is a square recess cut in a piece of wood to receive a projecting part in architecture), *mau*^{1} 'cat' and *mau*^{2} 'yak'. This recurrent occurrence of the *mV-* forms accompanied by different tones in some words renders it possible to seek for a general abstraction of the four-footed and four-sided feature by Chinese speakers. In other words, the nomenclature of cat and yak in analogy with that of square cropfield reflects the abstractness in the way of creating the names, tends also to explain the antiquity of its utilization in the course of human experience. I will try to explain the etymological connections of these Chinese words along all these lines.

It is important to note that both *tiŋ*^{1} 'the fourth of the heavenly stems' and *mau*^{3} 'the fourth of the earthly branches' have their corresponding words denoting square structural members. Their relationship is best diagrammed in Table 3.

It is by no means coincidental that both time series for 'the fourth' have acquired their semantic counterparts for square-shaped objects. There is a Chinese saying *tiŋ*^{1} *ʂi*^{4} *tiŋ*^{1}, *mau*^{3} *ʂi*^{4} *mau*^{3} '(literally: 'tenon is tenon, mortise is mortise' or 'keep *tiŋ*^{1} distinct from *mao*^{3}' – 'be strict, be precise'. In the Hemudu culture — a Neolithic site (4800 BC) in Zhejiang Province of China, there already existed a technique of joining roof beams and posts together by means of dovetails (tenon and mortise). In the Niya remains of the Tarim Basin, an important town along the transcontinental Silk Road

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Table 3: The Chinese words *tiŋ*[1] and *mau*[3] and their derivatives for square figures.

Characters	Pronunciations	Gloss ①	Gloss ②
丁	*tiŋ*[1]	the fourth of the heavenly stems	tenon (used for insertion into a corresponding mortise in another piece to make a joint), small cubes
卯	*mau*[3]	the fourth of the earthly branches	mortise (which is a square recess cut in a piece of wood to receive a projecting tenon)

Table 4: The names for certain four-footed animals and four-sided things in Altaic and Korean.

Turkic (Uigur)	Mongolic (WMo)	Tungusic (Manchu)	Korean
mal 'livestock'	*mal* 'livestock'		*mar* 'horse'
maral 'doe'	*maral* 'deer'		*mar* 'dry measure'
maymun 'monkey'	*morin* 'horse'	*morin* 'horse'	*maru* 'floor'
		moro 'dry quart'	*maur* 'village'
	(Dagur)	*muru* 'form'	*mahun* 'forty'
	monio 'monkey'	*monio* 'monkey'	

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during the Han dynasty (206 BC-220 AD) down to the Western Jin dynasty (265-316), wooden buildings and cases were structured by interlocking of tenons with mortises. It was likely that people may have called the square tenon and mortise simply 'square' or 'four-sided figure'.

The Chinese word *mau*[1] (Cantonese *māu*[1]) 'cat' is related to the words for 'cat' in Table 2. It is suggested that Chinese *mau*[1] 'cat' emerged out of the phonetic imitation of the sound the cat produces. But this explanation seems to me open to question. We should note that the cat was domesticated at the beginning of the Neolithic Age (Gai 1993:3). Considering this remote antiquity of the cat, it was possible that Chinese *mau*[1] 'cat' was named under the influence of the four-footed abstraction. It is the case with the Chinese word *mau*[2] 'yak'. The word appeared in the book entitled *Shan hai jing* (*The Classics of Mounts and Seas*), most of whose chapters were written during the Warring States period of China (475-221 BC). Presumably, the yak was domesticated first in the Tibet plateau. In this context, we should note that some Tibeto-Burman languages have the numeral *li* (such as Hani *li*) 'four'. In ancient China, the yak, in addition to its name *mau*[2], was alternatively called *li*[2] suggesting a connection with the Tibeto-Burman numeral *li* 'four'.

All these Chinese words are little known in the comparative studies involving the number four. Since I strongly trust in the depth and width of the early contact between Sino-Tibetan, Altaic, and Indo-European in Inner Asia, I have become enthusiastic of a transcontinental approach to basic vocabulary of various Eurasian languages. In so doing, I have been keeping watchful eyes on available favorable pieces of evidence. I have connected the Chinese numeral *si* (< **sit*) 'four' with ToA *śtwar* (< **śitwar*). Graphically, the Chinese character for 'four' appeared in the tortoiseshell inscriptions as four bars horizontally arranged together and subsequently came to be established as a square containing two strokes inside the square (四). There is another factor to be taken into account when the iconography of Chinese characters are used as cognitive evidence. The word *tiŋ*[1] 'the fourth of the heavenly stems' stands for a perfect square □ in the tortoiseshell inscriptions while it evolved into the present shape 丁 which deviated much from the original square figure. Concerning the word *mau*[3] 'the fourth of the earthly branches', philologists argue that it was originally mapped as two leaves of a door open (Wieger 1965:297). The leaves of a door

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may have well symbolized a four-sided figure because the door is usually in a rectangular shape. Generally, the geometric perception of square figures under given condition and at a given point in history was important; but since many things can fall among the square category, geometric representation could not universally applied to all the applicable items. Accordingly, the time series *mao*[3] 'the fourth of the earthly branches' was not drawn exactly as a square in the tortoiseshell inscriptions in order to be distinct graphically from its counterpart *tiŋ*[1].

The horse was the most widespread and disseminated over the world in historic time, having left its traces in the vast territories in Eurasia. The ancient rock carvings in Inner Asia contain many figures of four-footed animals. According to the ancient Chinese book *Mu tianzi zhuan* (*Story of Emperor Mu*) which was exhumed in a tomb dating back to the Warring States period, the Chinese people were often engaged in trade of silk, bronze and silver wares, and other goods for livestock and other animals as well as furs with the nomadic people in the north. It can be assumed that many animals were introduced into central China from the northern nomads (Gai 1993:3). Transcontinental flow of animals may have been accomplished by a simultaneous diffusion of their names. If we consider this possibility from the quadripartite perspective, we shall examine how certain animals and other phonetically similar words are represented in Altaic and Korean (see Table 4) and in Indo-European (see Table 5).

As we can see from Table 4, the route for diffusion of the name for 'horse' in the phonetic form of *mV-* (WMo *morin*) missed the area where the Turks existed at some point of history. But the root form *mV-* (*mal*) in the abstract sense of four-footed beast did enter into the Turkic languages.

In examining the Korean root **ma-* contained in *mahum* 'forty', *mar* 'horse', *maru* 'dry measure', *maru* 'floor' and *maur* 'village', we may gain more courage to connect its derivatives together under one early etymon.

The Manchu word *moro* in Table 4 is also used in the phrase *moro hiyase* 'dry quart'. Manchu *hiyase* 'box, Chinese peck' is a loan from Chinese *ɕiatsi* 'small square box'. A number of Chinese loanwords in Manchu exhibit the phonological pattern of turning the Chinese string of *ɕiV-* into Manchu *hiyV-*. For instance, Chinese *ɕiaŋtɕʰi* 'chess', *ɕiaŋ* 'incense', and *ɕietsi* 'scorpion' were borrowed

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into Manchu as *hiyangci*, *hiyan*, and *hiyese*, respectively. Thus, as an element prefixing the Chinese loanword *hiyase*, Manchu *moro* in the phrase *moro hiyase* may mean either 'square' or 'quart'. In addition, the Manchu words *muran* 'imperial hunting park' (perceived in terms of square field) and *mulan* '(square) stool, ironing board' reflect the root form **mu-/mo-*.

In Table 4, Dagur *monio* 'monkey' is a loan from Manchu *monio/bonio*, which is widely distributed in the Tungusic languages. This word has a connection with the words for 'monkey' in Table 2 such as Shui *mon*^{6}, Maonan *mūn*^{6} and Dong *mun*^{6}. Furthermore, we can relate these words to Italian *monna*, Spanish *mona*, Middle Low German *moneke* and English *monkey*.

In Indo-European comparative studies, we are led to confine the distribution of the Anatolian numerals *mieu-* and *mauwa-* 'four' to a limited area only. This approach does not account for a time-reckoning serialization and abstractive dimension underlying the process by which numerals may have entered into a wide circulation. It is difficult to accept this approach in the sense that, as being most basic words, numerals were potentially diffusible, with several other semantic overtones being added in the course of diffusion. Thus, when we speak of the horse represented by WMo *morin* in Table 4, we took note of several other similar words. In like manner, in their circulation the Anatolian words *mieu-* and *mauwa-* 'four' may have acquired different senses in some other Indo-European languages as shown in Table 5.

The origin of Greek *morphē* remains unknown. The archaeological findings show that the early Greeks were good at making geometric pottery. The manufacture of geometric vases presupposes understanding of geometric forms and shapes. During a protogeometric period the square □ or the rectangular ▯ in particular and rectilinear lines in general must have been among the primordial geometric forms the Greeks studied. Indeed, the words in Table 5 have differing specific meanings, but their etymological connections are the mental abstractions that can be captured only through a four-footed and four-sided image. This image is a psychological reality in human experience of all speech communities. The way in which particular geometric figures are named may vary from one language to another, but no language we know of ignores them all. Let us see some examples: Manchu *durun* 'form', *durbejen* 'square', WMo *dürі*

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Table 5: The names for certain four-footed animals and four-sided things in Indo-European.

	Hittite	Latin	OIce.	OE.	OIr.	Tajik	Greek
four	*mieu-*						
wall		*moenia*	*mœnir*[9]				
wall		*mūrus*	*múrr*				
horse			*marr*	*mearh*	*marc*		
mare			*merr*	*miere*			
female donkey						*markab*	
form, shape							*morphē*

[9] Old Icelandic *mœnir* means 'ridge of a house' and *mœna* 'to provide a ridge; to tower'.

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'form', *dörbeljin* 'square' are all connected with WMo *dörben* (**dö-r-*) 'four'.

The deliberate way in which human beings learned how to count with numerals directs our attention to those numerals that are used for counting. However, it may be that exploration of the less obvious words etymologically related to numerals is more demanding and more revealing. It is therefore not enough to study the existing numerals in our comparative studies. We need to explore language representative responses to numerical cognition. Under these responses the basic *mV-* forms have acquired a range of semantic shifts. These shifts are not random collisions but rather make a field in which the *mV-* forms embody a cognitive abstraction of four-sided and four-legged realities. And this is generally thinkable of 'wall, form, horse, mare, donkey' in the words consisting of *mV-* forms in Table 5; they are abstracted in the sense that they are free of their concrete meanings and functions in real-life situation.

6. Concluding Remarks

My studies shows that the words for 'four, square' have been preeminently linguistic designations for 'cropfield' and 'village'. The latter ones played the greatest historical function of providing places for human beings to maintain their activities in the age of agriculture. Often associated with villages and settlements, walls and fences have occupied and still hold a necessary place in demarcating four-sided boundaries and thus affect our cognitive approach to living space. The explanation of this common cognitive process and the sifting of the derived practices of name-giving to judge their validity in different languages can open up a new scope for anthropological and linguistic studies. Drawing on an anthropological approach to the semantic correlation between the words for 'four, square' and those for 'cropfield, village', with this paper I have continued to put an equal sign between the two semantic fields. I have tried to understand and explain the nature of this correlation. The whole nature of this correlation is now being recognized to a far greater degree and in far more direct ways than before. All the images of four(th), anchor, four-sidedness, square, field, village, and wall were brought together under the same cognitive motive. The arguments I have given so far for illuminating the etymological connection of Chinese *mau*^{3} 'the fourth of the

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earthly branches' and *mau*^{2} 'anchor (with four flukes)' with the Anatolian numerals *mieu-* and *mauwa-* 'four' can be summarized as follows.

TIME DEPTH. The Hittite hieroglyphic scripts that were produced during the time of the Hittite Empire, which flourished from approximately 1700-1200 BC, give us invaluable information about the numerals *mieu-* and *mauwa-* 'four' at a very early period, but this information is scanty, and no continuous texts survive down to today. Substantially in Chinese we have the time series *mau*^{3} 'fourth', which has been attested in continuous use since the Shang period (c. 1600-c. 1100 BC) up to the present day. For a century a huge amount of oracle inscriptions of the Shang period on tortoiseshells and bones have been excavated in central China. In these inscriptions, time was fragmented into sixty-day cycle and was taken with little regard to chronological order between the repeated cycles. Presumably as Chinese time-reckoning tended to maintain its separate status from counting numerals, the Chinese time series *mau*^{3} 'fourth' lost its numerical signification by being petrified as a serial number in the ganzhi system. As time series were often used as day-counts for divination, study of these time series in the *ganzhi* system and their possible connection with the number words used elsewhere in Eurasian languages is most useful as an aid to the reassessment of early cultural exchange between the Mediterranean Sea and the Yellow River. Both regions had strong development of agriculture and had deep repercussions throughout Eurasia. Accordingly, Chinese, Altaic, and Indo-European can all be found entering into such an exchange. This exchange must be profound and far-reaching in linguistic scope and depth in the course of development for millennia. The time depth for both Anatolian *mieu-* or *mauwa-* and Chinese *mau*^{3} 'the fourth of the earthly branches' is comparable because both of them were attested in roughly the same period. The exposure of the number four in the form of *mV-*, with a few exceptions, to the continent over is one of the most important examples of the cultural exchange. No matter how remote a place might be, its languages may have been susceptible to foreign influence.

If we approach the problem of the Anatolian numerals for four from the perspective of transcontinental cultural exchange, then the scope of their etymological connections is broadened: there is not simply a residual numeral for four in Indo-European that is suggested

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to have superseded the original cognate for four but rather a whole picture, a transcontinental network of linguistic interaction and cultural diffusion of the number four. My own comparative strategy has been to dig cross-linguistically deep into the words in basic vocabulary including numerals and to try to analyze them as systematically as I can. In this paper as usual I have implemented this strategy.

The early people probably speaking Indo-European made their way in great numbers to what is now Xinjiang, the northwestern part of China, in the Bronze Age and remained the chief population throughout the early centuries of the Iron Age in the region. Central Asian settlements along the transcontinental Silk Road were points at which people from different geographical locations encountered face to face. The collective demand for mutual communication and exchange triggered linguistic interaction, which in turn gave forms and substance to the ideas of learning. These pioneering people served as channels of language contact. Words flowed through them gradually and energetically. Such encounters along the Silk Road were frequently of trading nature; stations of exchange in an economy might have had direct and indirect links over thousands of miles along the route.

ENTITY STANDS FOR ENTITY'S SET OF SEVERAL PROJECTIONS AND FOR ENTITY'S GEOMETRIC SHAPE. The lexicon of any language derives from many sources and human experience. The speakers of a language leave their arithmetic and geometric readings as much in their formation of numerals as in their cognitive approaches to the things that are countable in one way or another. Numerals triggered the naming of anchor, comb, rake, rasp, teeth, claw, and crab. The numerical sense expressed in these names derives from a psychological association that can be stated ENTITY STANDS FOR ENTITY'S SET (NUMBER) OF SEVERAL PROJECTIONS: anchor stands for anchor's four flukes, rake stands for rake's number of teeth. The formation of Chinese *mau*^{2} 'anchor', along with Solon *tawuŋka* and Manchu *ninggiya* 'anchor', make a convincing case that Chinese followed a quantitative perception of such tools, only to halt in its semantic course toward becoming a numeral by being stuck in the name of the anchor. Now this type of numeracy seems to me of particular anthropological importance when we try to characterize its role in absorbing numerals. Generally, there was a wide use in many different cultures to carve notches on wood for counting purposes.

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In an abstract sense, the iconography of the notches Ⅲ is essentially the same as the teeth Ⅲ contained in the comb and rake. At this point, we may wonder how many teeth there were in a comb when it was named as such in Table 1 by what is now the number three or four in the given languages. There are two possible ways of interpreting this inquiry. First, the number three, in addition to its value of three itself, was also used in the sense of 'many' or 'several' as many languages underwent such a phase in the development of numeration. Thus, with this sense, the number three denoted several teeth contained in a comb. Second, the comb itself in its initial existence might have had considerably fewer teeth than that of what we use today.

In their range of uses and adaptability to general and specific functions, number words are among the most frequently used words in any given language, even though they themselves are of a close-set and recurrent nature. Being resourceful in their expressions the numerals for four become suggestive of predictable semantic shifts, whatever changes there might be in some ways that this semantic resourcefulness was once flourishing in history. The seven Chinese words *mau*^{3} 'the fourth of the earthly branches', *mau*^{2} 'anchor', *mau*^{3} 'mortise', (Cantonese) *mau*^{5} 'measure unit of area', *mau*^{1} 'cat', *mau*^{2} 'yak' and *ma*^{3} 'horse' all derived historically from Old Chinese **mau/meu* 'four(th)'. It is easy to see this if we consider the seven words to mean 'anchor with four flukes', 'four-sided mortise', 'four-footed animals' and 'four-sided field', respectively.

QUADRIPARTITE PERCEPTION. Sino-Tibetan, Altaic, and Indo-European have formed a set of *mV*-shaped words denoting beasts, this formation tests our approach. What this naming shows is how much there is in common between the cognitive experience of Chinese, Uigur, Manchu, Solon, Mongolian, Greek, and English. To take any word on its own or only in relation to other similar words defined as 'four-footed' would yield its meaningful result. And we should be prepared to see that the quadruped feature did play an important role in the formation of these words. They may have been named in slightly different ways at different times by different people. One is apt to go through the cognitive process of *mV*- = four = four-footed → *ma*^{3} 'horse' on the one hand and of *mV*- = four = four-fluked → *mau*^{2} 'anchor' on the other. Armed with this cognitive capability, early people could equally extend the iconographic quadripartite perception of the image of Ⅲ, ···· and :: to four-footed

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animals. In cases like these, every time the *mV-* form extended to designate some other four-footed animals, the richness of a lexicon was enhanced. By this extension is meant a rudimentary type of abstraction which took place in the practice of name-giving among speakers of a language. In the case of Sino-Tibetan, every time the *mV-* acquired a different tone from the existing one(s), the speakers' awareness of creating a suprasegmental distinction was strengthened. When homophony would occur in nomenclature, the mechanism of prevention may come to work so that a new name cannot simply be the same as the already existing ones. Rather, the name-givers would put the existing ones in a new perspective, tonal and morphemic as well as graphic (in the case of Chinese). These methods became a symbolic force that reduces homophony to a minimum. New kinds of tonal and morphemic distinction and logographic differentiation were thus introduced into the Sino-Tibetan languages at a fundamental level.

While the existing researches single the words for horse out of the set of related words, it is a quite weak point to separate etymologically the Buyi word *ma*^{4} 'horse' from the Buyi word *ma*^{1} 'dog' in Table 2. This approach examines nothing about the relation between the Chinese words *ma*^{3} 'horse', *mau*^{2} 'yak', *mau*^{1} 'cat' on the one hand and the relation between the Chinese words *ma*^{3} 'horse', *mau*^{3} 'the fourth of earthly branches' and *mau*^{2} 'anchor' on the other hand. The underlying feeling is that a set of designations which were habitually formed under the same cognitive process have not received a consistent explanation. We know from the ancient Chinese literature such as *Shan hai jing* (*The Classic of Mountains and Seas*) that the information on *mau*^{2} 'yak' and *mau*^{1} 'cat' came from the western part of China. This naming goes through succeeding stages in which four-footed animals as a same class come to be called after the words for 'four'. It was therefore more likely to have unitary appellation for four-footed animals. If this perception reflects a cognitive process, we have expected to have some more similar examples from various languages as shown in Tables 4 and 5. Thus, in numerical studies, the words for hand, comb, star, anchor, and claw are just as essential a part of the numerical culture as the numbers three, four, and five are. The ordered zodiac time series are just as integral a part of original numeracy as the enumeration one, two, three and so on. All in all, these words are just as important in

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understanding the origin of numerals as the cardinal numbers one through ten.

Not only do the numerals for four appear as names for certain things in a given language, but they appear also in the tendency to make expressions of this kind as similar as possible in the adjacent languages. We solve this problem by recognizing that the number four is an abstract form both quantitatively and geometrically and by expecting it to eventually acquire specific meanings in all of its occurrences. What ultimately stands behind the different occurrences of the *mV-* form is the cognition that they all bear the abstract feature of 'four' in one way or another. This common abstraction is enough to make the different uses of the *mV-* form count as a unitary cognition, staying constant from word to word. But, as we know, there is much more to these animals than mere quadruped feature. The reason for this early nomenclature is that the word is not the thing; the word or name merely symbolizes the thing. Even today we are not good at creating new words out of nothing. For instance, the English words *mouse* as a rat and *mouse* as a computer device are of one etymology. If future linguists hold a separate approach to these two English words, they will of course be wrong. Also, there are numerous stars in the sky, which may have very different makeups. But how many of them can we give different names? When they acquire a good astronomical knowledge, the future highly intelligent scientists will be surprised to see how we at present name so many different bodies with a scanty number of terms such as 'star'. It is therefore natural that people tend first to give a cover term for certain things and gradually come up with different names. The present study has tried to examine numeracy as a matter of looking into how people count arithmetically and how people compute geometrically.

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The Second Founder and the Fourth Function: Constantine after Romulus

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The author compares the founding of Constantinople, the second Rome, by Constantine with the mythical founding of Rome by Romulus, and suggests that both rituals involved facets of Dumézilian trifunctionality, modified by N. J. Allen's "fourth function".

Key Words: Constantine, Romulus, Georges Dumézil, Byzantium, Rome, Indo-European trifunctionality, fourth function

Any 'founding king' will by definition be a figure of some mystery, combining the features of the eponym or ultimate ancestor of the polity with the special potencies integral to one who literally makes Something out of Nothing. In this paper I intend to try to find a pattern of mutuality and equivalence in the careers of two such founders: Romulus, held responsible for the very beginnings of Rome, and Constantine the Great who – approximately a millennium later – would found the Second Rome, named after himself, that is the city of Constantinople.

This serious project is made somewhat easier because of the recent work of N. J. Allen, who, in explicating an important addendum to the trifunctional theories of Georges Dumézil[1] which Allen has termed the Fourth Function, has examined and reinterpreted the Romulan evidence in some detail: Romulus has, in fact, become Allen's ideal or exemplary Fourth Function ruler (Allen 1987, especially Allen 1996). Here Allen followed Dumézil in finding that Romulus had combined in himself the key powers of all three of the I-E *fonctions* – i.e., (in bare outline) sovereign power, military prowess, encouragement of fecund growth (Dumézil 1966/70: 25). The Romulan stance as 'first king' and as 'magical king' was

[1] For a concise explanation of Dumézil's Indo-European Three Functions theory, see Littleton 1982: 58-99.

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supported by this combinatory mystery, and, even more, was dramatized by the fact that the Founder was succeeded by kings who evidently represented each of the three Functions in turn: Numa Pompilius as lawmaker, Tullus Hostilius as warmaker, and Ancus Marcius as one who "conforme d'alleurs à l'esprit de la troisième fonction" (Dumézil 1968: 273). I do not have the time here to deal with every aspect of Allen's F4 theory, but I do want to underscore certain of his main descriptive points concerning the Romulan biography (other then this king's omnifunctional competence): (a) his semi-divine parentage, (b) the fact of the *auspici*, that is, the divine or heaven-sent (extraordinary) communication that authenticated Romulus's particular form and vision of his City and, as well, the installation or mobilization of the (ordinary) *sacra* that followed, (c) the sacrifice/fratricide, wherein Romulus was held ultimately responsible for the death of his twin, Remus, and (d) the death or 'immortalization' of Romulus himself.

The drama of Romulus and its details is taken mainly, if not exclusively, from Livy, and so shows that "historicizing of myth" to which the Romans are known to have been addicted. Now I would like to take up the Second Foundation, and Constantine as the Second Founder; here, I suggest, we confront an event *in history* that has been extensively recast or surrounded *in myth*, seeing the founder-figure of Constantine the Great drawn back into what Gilbert Dagron appropriately calls *Constantinople imaginaire* (Dagron 1984), especially in the source called the *Patria*, and his deeds laid out or explicated in what Dagron terms patriography. First, we must react to the overt resemblances that can be set up between one city's foundation and the other – and here we will already have taken note of the infiltration of elements of mystery and the supernatural into whatever bald historical account we possess. We initially assume that a Founder *must* deploy that combination of potencies seen so clearly in Romulus; Constantine will in fact show these, but we also have to deal with any possibility of a later parallel with the semi-divine paternity of Romulus, identified as a son of Mars. To find this parallel – to make Constantine semi-divine — is not a simple matter, but we know that aspects and even the natures of emperors and gods were thoroughly confounded early on in the Principate, and in the Tetrarchy devised by Diocletian, some decades before Constantine

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won supreme power, symbolic godhead was assigned to both senior and junior rulers: Diocletian, for example, was declared to be assimilable to Juppiter Maximus Optimus, his junior Maximianus to Hercules, the Divine Son (Alföldi 1970: 44). Constantine – who was the son of one of the original tetrarchs – broke away or was expelled from the remnants of the tetrarchic system, but he already had assumed his own sort of divinity: he had specifically taken up the signs of the sun-god, Apollo-Helios, and he maintained some of these divine signs and (literally, photogenic) associations long after he had founded a new, declaredly "Christian" capital of empire in the East.[2]

Second, to locate the divine "sign" (in Romulus's case, these were the favorable *auspicia* granted him by the gods). The Constantinian parallel to this divine communication must be the *visio* of the Chi-Rho which the legend of the Founder produced – either in the form of a dream, or as an actual waking vision – before the battle of the Milvian Bridge.[3] There is of course no association in this incident with the Eastern city which Constantinople would take as his own; his divinely-sanctioned defeat of his rival Maxentius merely won him the old capital, Rome (could the "new" divine message or apparition be taken as an antidote to, or an updating of, the old, Romulan revelation, in those *auspicia* that proved the Founder-King?). This miraculous vision granted to Constantine established the divinely-franked authenticity of the new ruler of the empire; what of the *sacra* seen as the other aspect of the connection to the gods or the divine? Allen, and I think properly so, make a special point of this sacral aspect, and shows the evidence of Livy to reveal the sacral activities of Romulus (1.6.4 - 1.7.1), as rites and sacrifices – priestly activity – were established following the exceptional, magical "sacrifice" of Remus (Allen 1996: 23). Constantine's assumption of a priestly (sacral) authority, in his turn, did not immediately follow his establishment of the pomerial limits of a new imperial capital; it may

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[2] The most extraordinary relic of this association is the cult-image found in Jutland; the image bears the costume and attributes of Apollo-Helios, and the face of Constantine: see Miller 1998: 26.

[3] For the special variations on a visio of the Cross rather than the Chi Rho, see Dagron 1984: 87ff.

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however be seen in the emperor's detailed and persistent intervention in the Council of Chalcedon, in his interference in the organization and the doctrinal debates of the religion he had declared licit: Christianity. The eventual elevation of Constantine to a sanctified status may have glossed over the extraordinary nature of this imperial intervention (remembering that Constantine declared himself not only *isepiskopos* – equal to the bishop in council – but *isapostolos*, filling out a new apostolate on earth) but it is also good to remember that the imperial right to intervene in the theological area or in questions of religious dogma was retained, at least in theory, by all of the eleven enthroned Constantines (and the other imperial names who followed him) up to the 27th of May, 1453, when the city fell to the Osmanli.

Third: the sacrifice that founds the city. Remus died that Rome might come into existence; we know from the broader archaeological record that real urban foundation sacrifices are attested to very widely, from Sumer to Knossos to Teotihuacán. How can the Constantinian legend be interpreted to show a parallel with this important sacrificial theme?[4] In fact the first "Christian" emperor was held responsible for several deaths associated with his career as a victor and urban founder: Maxentius died at the Milvian Bridge, Licinius was mysteriously "disappeared" when Byzantion, the future capital, was said to have been successfully besieged and taken by Constantine – all this according to the legend. And, the patriographic tale assigns blame for the death of either Crispus, his son, or another son named Constantine, to the filicidal founder-emperor. Once more we can follow a Founder's pattern, in recalling how Allen treats the deaths of three of Romulus's "associates" as trifunctionally related (Remus in a ritual setting, Lucumo in war, Tatius "in a quarrel associated with *wealth*" Allen 1996: 22) and we might be able to parse the deaths of Constantine's "associates" in much the same way: Licinius vanishing mysteriously when Constantine made the city his own, Maxentius dying in open war, and Crispus-Constantine

[4] The foundation of the Third Rome, Moscow, insofar as it can be assigned to Ivan Groznii, also involved a death: of the tsar Ivan's son at his father's order.

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destroyed in an act of filicide, which is easily attached to the catalog of F3 "sins."[5] A simpler equivalence with the death of Remus, however, might be constructed if we take either Maxentius or Licinius as "brothers" (brother-rulers) to Constantine, eventually the *victor omnium*. Finally, the disappearance of Romulus – his death/non-death and lack of heirs – has at least a faint parallel in the inability of Constantine to pass on his own line, his sons being dead; Constantine, like Romulus, would live on in his exfoliated legend.

I should stress at this point that we have no evidence at all that Constantine *consciously* imitated the Romulan *Ur-Gründung* – by adopting a divine persona or association, claiming the authenticating Vision, killing his kin as a sort of "foundation sacrifice" and so on, to secure – or in the name of — a perfect re-foundation of a New Rome. Obviously our sources in imagination do this for us, as they had once "historicized" the original founding-myth of Rome, and as they now mythize the history of the second Founder.

Some other lines of equivalence between the two Founders may now be drawn, lines we ought to be sure to again identify as patterns – or constructions – of the imagination or the mythopoeic, legend-creating mind. Dagron affirms that a "straight line" connection (visible in the patriographic texts he examines) runs right from Romulus to Augustus to Constantine (Dagron 1984: 24); Augustus is inserted, I suppose, as the accepted founder of the *Imperium Romanum* (his own tendentious propaganda, of course, made him the imputed re-founder of the old Republic). Actually such a scheme is almost too rational, compared to some we can locate, where the secular or 'historical' time-line is particularly and spectacularly distorted in favor of a sort of temporal-iconic logic. Such an imaginal plan sees a series of foundations on the site of the later Christian-imperial city: a) the beginning overseen by the

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[5] *Constantinople imaginaire* has Crispus caught up in a Phaedra-like tragedy involving Constantine's second wife, Fausta (Dagron 1984: 94-95); the "legend" of Constantine as it was reflected and continued in the West put the blood-guilt for Crispus on a "sinning" emperor: see Reydellet, citing Sidonius Apollonaris (Reydellet 1981: 56, 61).

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eponymous Thracian king, Byzas,[6] then b) a "pagan imperial" foundation undertaken by the emperor Septimius Severus (who supposedly sacrificed a young virgin as *his* foundation insurance: Dagron 1984: 80-81), and finally c), the authentic act of the Christian emperor and saint – but who, in some of these imaginative patriographic sources, clears the field for his endeavor by personally defeating and killing (insert a drumroll here): Byzas the pagan king *and* Severus the emperor. (82-84).

Another admirable twist in this Foundation-tale moves us to the eastern city's great Hippodrome. This structure and space was indeed an important civic locus, for here would be played out some of the crucial rituals in the ongoing drama of the imperial center – and we might note that, according to John Malalas, it was Romulus who had inaugurated, if not the urban chariot-races themselves, then the formation of the two most important Roman course-factions, the Greens and the Blues (Malalas 1831: 176-177). The patriographic sources sometimes shift the agonistic aspect of Constantine's civic conquest and civic foundation to the "courses," *dromoi*, that is to the great chariot-races run here. Of course the Constantinopolitan Hippodrome was never merely a race-course (even in "mere" secular history); it was a mighty ceremonial center where, specifically, the *demes* (the city's population cast, in this context, in four divisions for several purposes, including the vital ritual aspect) could officially encounter the emperor sitting in state as an almost absolute autocrat.[7] The Hippodrome, like the City itself, resonated in the Byzantine mind in ways that should be familiar to us, since it was (1) a politico-ritual focus of the imperial monarchy, (2) the place and symbol of confrontation or agon and of "victory" and (3) simultaneously, a symbol for "fecundity and prosperity" (Dagron 1984: 170-171). An overarching and radiant sun-symbolism carries much of the power of these three Functional activities, all centered

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[6] Or by "twins" - Byzas and Antes - an invention which Dagron trenchantly observes will "satisfy the patriographic point of view" and also imitate the Remus-Romulus gemination and foundation: Dagron 1984: 79.

[7] "Rising in the East" in the imperial box or Kathisma (Miller 1998: 30) and thus repeating or reinforcing another kind of solar significance.

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in this place, in its form and in its functions. Some of the patriographic sources put Constantine into the Hippodrome, as the victor over King Byzas in this athletic locale rather than in battle. A later imperial Constantine (the emperor-litterateur Constantine VII Porphyrogenitus) noted that every emperor had to replicate this first victory, by driving a ritual quadriga sun-wise around the Hippodrome; thus he took part in two of the high-ceremonial "solemn courses" (*proskynesimôn dromôn*; see Miller 1998: 33). However, there is an additional 'imaginary' Hippodrome scenario worth noting, and that is that here the Green faction is said to have ritually acclaimed "Justinian and Constantine the New Apostles" (Dagron 1984: 173).

Now we see that we have moved from a conceptual prolapsing of time *before* Constantine (as his legendary victory was won over the Thracian king Byzas and the pagan emperor Severus) to a prolapsing of time *after* Constantine; the patriographic legend treats Justinian as Constantine's successor (Dagron 1984: 274), with no intermediaries. To some extent we can visualize another parallel to the Romulan text: as Romulus was twinned with and succeeded by Numa Pompilius, the Law-King, so Constantine as Founder was succeeded (in imagination) by another great law-maker, Justinian. As a matter of fact the *Patria* make little note of this ideal gemination; these sources are much more interested in pairing the two emperors as builder-creators: the one as founder of the City itself, the other as builder of the Great Church, Haghia Sophia.[8]

The "imaginary Constantinople" of the patriographic texts pins Constantine into the fabric of his imperial city in ways that I believe strongly reinforce Allen's concept of the omnivalent Fourth Function monarch. Here is the Founder portrayed as great magician, as victor – and as sinner, for it appears that Constantine can be fitted into that F4(-) valence that Allen adds as a fifth category to his functional

[8] The 10th c. mosaic in Haghia Sophia making this image concrete - showing the two emperors offering their creations to the Theotokos - is frequently reproduced: see Dagron 1984: pl. VIII; Mainstone 1988: pl. 30. For the significance of the Mother of God in Byzantine imperial ideology and theology, see Miller 1992: 252-254.

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remapping.[9] To summarize the process of foundation and to reinforce the image of the founder: Constantine was retained in East Roman memory as *the* perfect Emperor. If his full panoply of powers tended to be leached away from the imperial office after he died (and this may be a good reason why Justinian, with his own reconstructive or re-founding political ambitions, was imagined to be his imperial twin-successor) and if these powers were not revitalized in Byzantium until after the defeat of the rival Persian oecumenical empire (see Miller, forthcoming), Constantine's extraordinary, combinatory potency – the potency of a true Sun-King – was always in full view in East Rome, as his column and statue commanded his Forum and his City around and beyond it. He prepared – that is, was credited with preparing – the efficacious patterns of state ritual followed later even as his magically-recorded words strangely continued to guide imperial diplomacy; his name reverberated in the power-laden ambiance of the Hippodrome even as his control over the operations of the priestly *sacra* – with the imperial domination over the Christian ecclesiastical hierarchy – defined the full meaning of "empire" to other, envious medieval monarchs. The successor emperor named as the New Constantine in the Byzantine liturgy of imperial coronation took on the powers of *nomos empsychos*, Living Law, which certainly was an original Constantinian claim; in another area, in the ceremony of *Adventus* celebrated after an imperial victory a martial emperor paused to be re-robed, and so transmuted, in the Forum of Constantine before passing on and into the Great Church across the way – and again, Constantine the Great was the model (as his great statue on its column oversaw the entire event). All Founders may be imitated in various ways; all Founders must display and deploy the extraordinary powers Allen, and in this case I believe correctly, sees combined into an IE Fourth Function. And any founder of a*New* Rome must, as I think Constantine did, circle back to replicate and to reinvigorate the omnifunctional myth of Romulus. Place, person,

[9] This is not a point Allen emphasizes in decrypting Romulus and his functional attributes, but I think it must be added. Constantine's "sins" are identified in making him a "bloody conqueror and a persecutor" (though of pagans) and as a murderer who repented and raised statues to those he had slain (Dagron 1984: 93).

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and power are thus all once more re-imaged and recombined.

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The University Grades Received in Education and Psychology Classes: Documenting Inflated Grades in Education Classes

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Grades from all undergraduate education and psychology classes at a state university were examined. The university was a leader in the education field, and led the state in number of teachers who got their degrees there. Both undergraduate and graduate level classes were studied for the grades given. The 8119 grades showed that education professors were much more likely than psychology professors to give an A, and much less likely to give an F. Since education students tend to have, in the first place, lower achievement scores than psychology students, these results show that education has markedly lower academic standards than psychology. This may have something to do with the frequent discontent that people express with regard to our schools.

Key Words: Higher education, teacher education, psychology, university grading

Teacher education and teacher standards in the United States have come in for a great deal of criticism (American Association of Colleges for Teacher Education, 1991; Goodlad, Soder, & Sirotnik, 1990; Grossman, 1990; Harthern & Rolle, 1991; Kramer, 1991; National Board for Professional Teaching Standards, 1991; Scrupski, 1999). Teachers are often criticized and seen as doing an inadequate job (Reinhartz, 1988). Some think the standards for choosing teachers are not high enough, and that other fields doing a better job of choosing their professionals. Higher standards lead to fewer succeeding in entering the field, but that tends to assure the quality of those who do make it (Rasmusen, 1999).

If we go by achievement test scores, there is some truth to the criticism about ability of teachers. Norms from the Educational

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Testing Service about the Graduate Record Examination (GRE) (Educational Testing Service, 1992) showed that a score which would be in the 40th percentile for a psychology major would be in the 60th percentile for an education major. In other words, education majors displayed a lower level of ability, at least as measured by the GRE. One's basic ability seems to have a lot to do with how successful one can be in learning (Eisenman, Melville, & St. Andrie, 1994).

This study looks at grades received by education and psychology students at a state university that is something of an education leader. It leads it's state in the number of school teachers it produces. "School teachers" refers to teachers who work below the college or university level, e. g., teachers at the kindergarten, grammar school, middle school, and high school levels. If education classes show grade inflation relative to psychology classes, it would support the view that teachers have an easier academic road as far as grades are concerned and are given better grades, even though they have, on the average, lower GRE scores.

METHOD

Subjects

The analysis consisted of all students at a state university registered for undergraduate education and psychology courses. The total number of students registered for these courses was 8119. This number is greater than the actual number of students involved, since it counts each time a student takes a class. Thus, a student who took two of the classes in this analysis would be counted twice.

Procedure

Grades were obtained for all students who received grades in all undergraduate education and psychology courses during one academic year, including I (incomplete), W (withdrew) and WF (withdrew failing), as well as the usual grades of A, B, C, D, and F. For education classes, the grades are reported for the following three Education Department subfields: curriculum and instruction, administration and supervision, and special education.

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Results

The education professors grade students in their classes much easier than the psychology professors grade students in psychology classes. Over half the students in education classes received A's, with the exception of special education, ranging from 63.8% of the students in curriculum and instruction receiving A's to 73.7% of the students in administration and supervision getting A's. In contrast, only 22.8% in psychology classes received a grade of A. Special education gave only 39.8% A's, which is low for education classes in this sample, but still higher than any of the psychology classes.

If we look at the F grade, we see that students in education classes are unlikely to receive a failing grade, while students in the psychology classes are more likely to be given an F. The finding was that 1.2% of students in curriculum and instruction received an F, 1.8% in administration and supervision, and 6.3% in special education. In contrast, 9% of psychology students got a grade of F.

Discussion

The results show that students in education classes received more A grades and fewer F grades than students in the psychology classes. It is possible that education teachers try to take into account the lower skill level which education majors often have, relative to other university majors. This would result in a teaching and grading style which is easy for all students in education classes, including the students who take the class but who are not education majors. If the education professors are going to help their majors, they have to help everyone who takes the class. However, there is yet another possible explanation, which has to do with educational philosophy. It may be that people who teach education courses tend to put less emphasis on grades, or at least less emphasis on giving a range of grades than do faculty in other areas. For instance, some education classes which I know of are not really designed to grade the student in strict terms, but seem to have a kind of relaxed, noncompetitive atmosphere. Students have to meet certain minimal criteria but, if they do, a good grade is assured. Contrast this to the typical psychology class, where students may be given multiple choice tests over several chapters or be expected to show detailed learning in essay tests. In either case, the psychology student has to demonstrate the acquisition of a great

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deal of knowledge to get a good grade, while the education student often does not have to show as much learning of material.

Special education was least like the other education classes in terms of grades given. At the university studied, special education had been recently part of the psychology department, but then changed and became a separate education department. The psychology culture may have been absorbed by the special education faculty, resulting in tougher grading than their other education peers. Organizational culture can determine outlook, leading to a philosophy of, in this case, grading, that reflects both the previous affiliation with psychology, and the current affiliation with education. The result would be grades easier than psychology but tougher than other education departments, which is exactly what occurred.

Education majors are typically below most other university majors in achievement test scores. Thus, having a culture within education schools which results in easy grading could be a way of managing deviance (Eisenman, 1991). That is, instead of having education students doing poorly in school, as the GRE test scores might predict, the culture of education departments makes sure that its students do well, at least as long as they take courses in education, and stay away from other departments. One result of this, as many university professors have learned, is that when education students take courses in other departments, they often expect an A grade, and get angry if they do not get it.

School teachers have a very difficult job to do. Much is expected of them, including things that instead, perhaps, should be dealt with by society, the family, etc. Many do well with limited resources and pay. This article is not meant to put them down, but to show some facts as they really are. Perhaps education professors need to consider the policy implications of their very free giving of A's and their infrequent giving of F's. On the other hand, if a rigorous program led to many people flunking out who had wanted to go into education, it could mean there would not be enough teachers for our schools. The issues are complex.

Future studies could look at grades in graduate school, although most graduate students get good grades, so there would likely not be enough of a range to compare classes. Other fields can be looked at besides education and psychology. It would be especially interesting

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to see how test scores such as the Scholastic Aptitude Test (SAT), American College Testing Program (ACT), and Graduate Record Exam (GRE) relate to different majors or classes (e. g., political science, agriculture, physics, etc.) and to the grades the professors give.

This present article sheds some light by pointing out the remarkable grade inflation in education classes. Many may have suspected that this was the case, but did not know for sure. Others may not have known at all the realities presented here.

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Man, Evolution and Ethics: Teilhard de Chardin, Religion and Evolutionary Reality

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In considering the history of human achievement, the recent two- to three-hundred years of human development have specifically enriched the sphere of human knowledge. For the first time since the existence of *Homo sapiens*, nature, the environment, and man himself have all been subjected to a scrutinizing analysis. Modern science has brought about a "detached" objective study of the world around us and has eliminated many mythical and unclear ideas about the world and ourselves.

Yet the materialistic viewpoint merges with an almost "spiritualistic" thinking. There is a desire to preserve past forms of thought, to preserve old feelings, and a religious longing for a firm background to all our cosmic problems.

It is a necessary part of human evolution that we modify old concepts and seek to conceive new frameworks which can help to build a philosophical background that will give our existence a "humanized" and "friendly" role. A personified god-father figure is popularly desired. This is because it does not seem reasonable that a cosmic creation as unique as man could have developed as a mere product of chance.

Pierre Teilhard de Chardin wrote a much revered series of books in which he attempted to equate evolution with religion. As a Jesuit with an inclination for archaeological research, he touched on several fundamental facts. While his general argument was too vague and philosophical to deserve much analysis (see Monod's judgment[1]), his desire to harmonize human values in accord with evolutionary reality was both remarkable and interesting.

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[1] Jacques Monod, *Le Hazard et la Necessité, essais sur le philosophie naturelle de la biologie moderne*. Editions du Seuil, Paris 1970.

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In his book *L'Energie Humaine*[2] (Vol. 6, p. 136), Teilhard de Chardin clearly formulates the basic issues arising from our understanding of science. He states that humanity is not seeking another god of infinite power, but rather an understanding of its own evolution. This was very significant as it is formulated by a man who still sought to isolate the skeleton of the god-father-and-son concept from the fleeting material world.

While Teilhard de Chardin still used such unwords as "mystic" in his quest for a merger of the drive behind evolution with "L'amour de Dieu," he eventually arrived at a clear expression of what should be humanity's goal. "In us as humans," he writes, "the spirit is inherent in evolution and all our perfection, drive, interest, etc., should be found and directed in the desire to push forward in our quest for a continued evolution."

At a later point in *L'Energie Humaine*, de Chardin discusses methods by which mankind may effectively maintain genetic hygiene and biological development. He proposed to utilize all scientific methods available not only for the control of sickness and counter-evolution (such as sterility and weakness in the physical sense), but also to apply methods of selection, hormone action, hygiene, etc. to continue evolution and develop an even more superior human type. Contemporary human society is occupied with everything except its own composition and form, and he asks his readers: Is it without importance how the future society is formed, what composition it will have? Are there ethnic groups who do not contribute to our progress or fulfill our needs and who will do nothing more than take up space on this earthly spaceship?

Here de Chardin clearly asks the fundamental question: What should be the attitude of the active part of humanity vis-a-vis stagnant populations of low ability and definitely low potential for progressiveness? The earth is, after all, a surface of fixed dimensions and is thus limited in the population it can carry!

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[2] This was the sixth volume of the works of Pierre Teilhard de Chardin published by Editions du Seuil, 27 rue Jacob, Paris VIe, France: 1. Le Phénoméne Humain. 2. L'Apparition de l'Homme. 3. La Vision du Passé. 4. Le Milieu Divin. 5. L'Avenir de l'Homme. 6. L'Energie Humaine.

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We also read in de Chardin's mind that as a religious man he believes that evolutionary principles should be considered when formulating the concept of human rights. If everything humanity has ever gained in the struggle for an understanding and organization of nature may be lost due to genetic deterioration, what is the purpose of love and tolerance without intelligent discrimination?

As man develops, his ethics have to develop. It is one of the great deficiencies of the old religions that they adhere to a dogma which fossilizes human thought. What was good 2000 years ago may be utterly degrading now. Our ethics have to change. Humanity has found remedies for most major illnesses and brought infant mortality down to a few percent, even in the impoverished countries which currently suffer from over-population. Meanwhile, millions of genetically promising unborn babies are aborted every year and nobody asks about their "quality," while low-grade human procreation is rampant in all underdeveloped countries and in the slums of the developed world.

Is there any sense in the idea of the "pursuit of happiness" in connection with procreation? As a result of casual reproduction, the creative part of humanity has to foot the bill for the survival and education of all those born to parents who are incapable of providing for the numerous children they carelessly produce? Is it not time to start understanding the genetic code and its bearing on the future capability of the human being conceived and born?

The "biological scandal" to which Teilhard de Chardin refers in his writings is certainly with us. We do not dare to tackle our human quality problems. And yet, what could give humanity a higher sense of achievement? What could be more fruitful than a directed and organized research of human capability in the context of the genetic set-up. A new ethic based on a complete understanding of nature can give man a hitherto unrealized sense of being a part of nature, but not as a product of mere chance.

Numerous religious, sociological, philosophical, and humanitarian speakers have expressed reservations, repulsion, and outright horror with respect to embryological experimentation concerning man. Our current ingrained ethics prohibit us from facing the facts of our biological limits on earth.

Such deplorable conclusions are based on wrong premises.

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While the earth was unbounded at the time of the creation of the major religions, we have to face the facts of our limits and thus change our thinking. There is a constant tension between a sanctity-of-life ethics and a quality-of-life ethics, two moral positions which are often opposed to each other. Is there not a need to control the quality as well as the quantity of the children we bring into the world.

It is essential from a human point of view that we do not close our eyes to biological facts when it comes to procreation. Old values which disregard the reality of nature can deform human thought and consciousness. It is without doubt a higher ethic to accept nature and to plan for a life of dignity and maximum reward for our progeny. There is nothing inhuman about nature and human control of nature. In view of the facts that we can develop healthy and intelligent human beings by intelligent conception rather than "genetic roulette" our old value system has to change.

Acceptance of our responsibility to make decisions, for example, about artificial insemination in cases of genetic defects, is of higher ethical value than blind taboos about intercourse as the only ethical conception. Fletcher[3] points out that "people who know a child will be defective or could have known if they had cared but nonetheless allowed it to be born, are as guilty of wrongdoing as those who culpably contributed to a wrongful death." It is by far the higher humanity which eschews genetic roulette. It is also ethically superior to put society's health and future above one's individual life. It should not be necessary to protect human "happiness" by a constitutional liberty to blindly procreate. Humans should be happy when they care that future generations can live a full life in dignity.

This theme has been developed in greater detail in the author's book *Conscientious Evolution,* ISBN 1-878465-36-8 recently republished by Scott-Townsend Publishers, P.O. Box 34070, Washington DC 20043 (see advertisement elsewhere in this issue).

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[3] J. Fletcher, *The Ethics of Genetic Control: Ending the Reproductive Roulette. Anchor Press*, New York, 1974.

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Global Meltdown: Immigration, Multiculturalism, & National Breakdown in the New World Disorder
Smith, Joseph Wayne; Lyons, Graham; & Moore, Evonne
Praeger Westport, Connecticut 1998 ISBN 0-275-95600-8

Flipping the pages of this book, your reviewer discovered that here was the ultimate horror story, told by three visitors from Mars who landed, of all unlikely places, in Adelaide, Australia. Your reviewer closed the book and thought a while.

Having read their earlier 1997 work, *Healing a Wounded World: Economics, Ecology, and Health for a Sustainable Life,*[1], your reviewer expected to agree with what these authors had to say. What he wanted to know for himself was, NOT whether there will be a meltdown of civilization, but: (1) When will it come? (2) Can it be avoided? (3) What are the mileposts along the way? (4) Where are we now?

The book divides into four chapters dealing respectively with: (1) The cultural collapse now occurring worldwide as the authors and others see it. (2) The mechanisms of technological and ecological collapse without regard to cultural collapse. (3) Australia, offered as a case study of the way we are going. (4) A survey of the views of other doomsayers.

Chapter 1: Here the authors do two things: (1) Review, analyze and compare the views of past and present seers who look to the future after 2010 A.D., (2) Travel around the world looking unsuccessfully for a country which is not already crumbling.

Chapter 2: Many thinkers have been pondering the social and economic world problems that will bring our civilization to an end – for much the same reasons past civilizations ended. Only a few have thought beyond to the question of the extinction of mankind. In this chapter our visitors from Mars first examine some mechanisms by which man may become extinct, as he surely someday will, and, second, examine the more immediate mechanisms by which we shall

[1] Praeger, Westport, CT 1997 ISBN 0-275-95601-6

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descend into permanent anarchy.

Among the interesting possible mechanisms for extinction are nuclear winter, volcanic winter, run-away ozone layer destruction, an uncontrolled laboratory release of nuclear or zero-point energy, enhanced greenhouse effect, an asteroid strike, an ice age induced by passage through an interstellar cloud, radiation damage by a supernova explosion, disruption of the solar system by the visit of a cold massive intruder from outer space, a disaster in genetic engineering or nanotechnology, a computer-initiated global thermonuclear war, destruction of agricultural potential by loss of biodiversity. The authors discuss the likelihood of asteroid and meteorite attacks in some detail and the discussion is carried forward to the more immediate prospects of the destruction of our techno-industrial civilization without the extinction of man by the partial destruction of earth systems or areas, for example, by a large meteorite.

There are also very real dangers of a psychological nature: the spread of Schopenhauerian pessimism or the spread of the current doctrine denying objective meaning and moral rightness (e.g., with regard to killing people for amusement). Among immediate psychological dangers they list as pre-eminent the persisting optimistic philosophy of economic globalism and growthism.

They cite as an example of "Nature biting back" the effects of the Green Revolution, which involved crop specialization and vulnerability plus increased irrigation and fertilization, the minimal result of which has been merely to worsen and delay consideration of the population problem. "The new technology and the Green Revolution supplied an artificial prop to an already unsustainable population growth in the Third World." (p. 39).

From its rate of growth there are already hints of a "Chernobyl on the Internet," whose cost and consequences cannot be foreseen. One possibility is economic collapse following the unrestricted creation of e-money by the "Java wallet" described by Netscape in its Navigator-4 web browser. Cyber-crime and cyber-terrorism are still in their infancy. The authors' description of some possibilities is not reassuring.

The man-caused destruction of hormonal mechanisms in nature, first recognized in the case of DDT, now bids to become a universal

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disaster. "PCB concentrations unmeasurable in the Great Lakes ... increased exponentially up the food chain ... magnified up to 25 million times in the top level feeders such as herring gulls." [p. 45, quoted from Colburn et al., 1996, *Our Stolen Future*.]

The midsection of Chapter 2 is devoted to a summary of ecological reasons for the collapse of civilization, which are given largely in the form of duly referenced statistics of which a sample will be quoted below.

The authors' position is this: "We believe that on the basis of present trends, a great die-back in human population numbers will occur." (p. 46). A more detailed argument on the limits to growth is given in Smith, Lyons, and Sauer-Thompson (1997). A less frightening and more digestible but no less foreboding presentation will be found in Grant (1996).

Among the more pressing problems of the next decade will be starvation, migration of refugees, and social disorder. The following quotation gives the flavor of the argument:

> In 1950 there were 83 cities with populations of more than a million people, with 34 of these in the developing countries. Now there are more than 280 cities with such population numbers and this figure will double by 2015. ... Most cities in the developing world will face extreme water shortages by 2010. [p. 49]Three pages are given to an analysis of China's dilemma, of which the probable outcome is the end of the Asian miracle. in our opinion ... China's run to home base is too late. [p. 59]

The foregoing considerations are environmental. In the final section of this Chapter 2, the authors examine the economic implications of business globalization. If there are degrees of tragedy (in the Greek sense), the major economic revolution now underway must stand as the supreme example. In 15 pages, under the heading "The New World Disorder: Economic Globalization and the Breakdown of 'Nations' and Community" the authors attempt the exposition of a drama of such intricacy as would have taxed a Shakespeare to develop.

The underlying political truth is that both the developed and the developing worlds are being rapidly deprived of their sovereignty. The

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citizens of all countries have less and less control over their lives as power passes to a world consortium of monetary capitalists. World Government is half way here and there seems to be no way to stop it.

The first reaction of anyone might be.. "What is bad about that?" The answer is twofold:

1. The middle class in the U.S. is being destroyed as those who are genetically well-endowed move up and those who got a poor shake of the genetic dice move down. The lower class in our high-cost-of-living country is placed in competition with labor in low-cost-of-living countries – an impossible situation. The result in the U.S. is, and will be, increasing economic stratification, poverty, and social disorder. In this process the reasonably well organized First World countries are being socially destroyed by exporting jobs (and by its counterpart, immigration) without benefitting the Third World. This is not a matter of social justice but of the survival of civilization.

2. The goal of "One World" to be achieved by economic growth is wrong. Space, energy, raw materials, and the laws of thermodynamics will not allow it. Globalization is the wrong strategy if there is to be any hope of escaping ecological collapse.

The authors do not explain this in the few pages at their disposal. Perforce, they have settled for piece-meal arguments supported by examples. This is not much help to an open-minded reader who is confronted with the staggering proposition that our most successful economic leaders are dead wrong and that public figures such as Jeremy Rifkin, who have been demonized in the press, are more than half right.

Meanwhile, from Chapter 3 of the book under review, here are three examples of the incongruities of economic globalization:

In 1992, the U.S. passed the Marine Mammal protection Act which forbade importation of tuna fish caught in nets that indiscriminantly capture dolphins along with tuna. Mexico successfully challenged this trade restriction before the GATT Dispute Resolution Panel on the grounds that it was a non-tariff trade barrier. In the transnational world, all that counts, the authors argue, is money.

Daly and Cobb (1994) offer a detailed discussion of the social irrationality of goods importation guided solely by monetary considerations. Smith et al. in the book under review give an

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Australian example of the economic treason that often results when transnational trade is freed to run on autopilot. George Soros, who made his billions by speculation on the world currency markets, believes "the untrammeled intensification of laissez-faire capitalism and the spread of market values into all areas of life is endangering our open and democratic society." [Soros "Why the free market is a danger to democracy." *The Weekend Australian*, March 8-9, 1997, p.26. Quoted in Smith et al., 1998, p. 72]

Chapter 3 is a 29,000-word essay about almost everything physical that matters in Australia. Who should read it? Australians, of course, for they live with their problems of the present and their hopes for the future. Here they will find their history, past and present, relieved of scholarly conceits, and their history to come, as predicted by empirical fact. Professional ecologists should read this chapter; for Australia is a strange land whose singular features may clarify the complexities of the rest of the world.

The story begins 40 million years ago when the Australian Plate detached itself from Gondwanaland and began its northward drift. Australia's weather is erratic, with drought coming in two- to ten-year cycles controlled by the El Nino Southern Oscillation. Because it has experienced little glaciation and no volcanos, its soil is thin and poor. The Australian Aborigines arrived 40,000 years ago, evidently displaced from South East Asia by Mongoloids. Around that time, all large-sized animals became extinct. The land was sparsely settled when the Europeans arrived 200 years ago. The population was 18 million in 1947 at the end of World War II, and it is increasing rapidly as a result of immigration.

Most of this chapter is devoted to the problems of population, pollution, present-day immigration, resource depletion, the decline of pastoral and agricultural land, and in particular water shortages for all purposes except in the far north:

> Compared to other continents, Australia has the least river water and the lowest water run-off; while two thirds of the average annual run-off occurs in the [largely uninhabitable, extreme] north ... Australia's rainfall and stream flows are the most variable in the world. Droughts and floods are relatively frequent occurrences ... Much of the water being used in the center of Australia is "fossil

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water" accumulated during a wetter climate period 10,000 to 25,000 years ago. [p. 113]

Chapter 4: "Global Meltdown: A Tapestry of Turmoil at the End of the Modern Age" is the shortest and most interesting chapter of the book. It is here that the the authors relate one-world globalism and post-modern nihilism to their common origin in 18th Century Enlightenment and ponder the moral and epistemological crises that the world faces:

> In the previous three chapters, an outline and defense of the global meltdown thesis – that modern civilization is hurtling toward its doom – was given ... Show that we are wrong! Show us how all of the environmental problems discussed in our previous book, *Healing a Wounded World* can be dealt with in a world where the nation-state's power is not only waning – its power flowing to multinational business – but where the nation-state itself seems destined to be destroyed by the dual forces of ethno-racial fragmentation and economic globalization. We have yet to see any satisfactory response to these problems, precisely because there cannot be. In a world fast approaching, or overshooting, ecological limits, a world where the global elites have decreed that the world shall be a cosmopolitan supermarket, catastrophe is irrevocable ... In this context we will explore in this final chapter some of the philosophical consequences of the global meltdown thesis.

How soon and how fast will the meltdown occur? To answer this, one must subjectively integrate a vast array of interacting factors. As an engineer who thinks in terms of technological feedback, your reviewer will switch metaphors and guess that some time after 2010 A.D., when the now-seething volcano erupts, we are more likely to be destroyed by an explosion than by a lava flow, from which we might try to run.

R.A. McConnell

The above has been condensed from Professor McConnell's far more extensive review contained in his 430 page *Joyride to Infinity: A Scientific Study of the Doomsday Literature* (2000, Scott-Townsend Publishers, P.O. Box 34070, Washington D.C.20043. $25.00. ISBN 1-878465-35-X.

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Joyride to Infinity

Robert A. McConnell Ph.D.

Joyride to Infinity is an alarm-sounding book that manages to be at the same time both conservative and radical in its encyclopedic exploration of our future.

The theme is over-population and the resultant evils of mass immigration and environmental pollution. If mankind cannot control its actions, Nature, in her cruelty, will do it for us. The author is a reluctant radical who was forced to acknowledge the extreme findings that he uncovered in his exhaustive pursuit of reality.

Professor McConnell argues that the globalization of our economy is leading to the end of nationhood, mass migration and the uncontrolled growth of population. The causal links are now clear. He sees no hope for sub-Saharan Africa and little hope for China, which faced its population problem too late. The rest of the world is having to cope with the overflow from the regions that are over-reproducing.

Planning for the future requires caring about the future. Those cultures which have no past to preserve will have no future to live in. Cultural Diversity, which begins by denying the past, will never summon the will to sacrifice for the preservation of the Earth as a worthy habitat.

The author is both an engineer and a scientist. As an engineer, his competence was proved as a radar development group leader in World War II. As a scientist with a Ph.D. in physics he is a Research Professor Emeritus of Biological Science, a Life Senior Member of the Institute of Electrical and Electronics Engineers, a Fellow of the American Psychological Society, and a Fellow of the American Association for the Advancement of Science.

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